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THE KRUPP GUN.

STEEL-GUN making in the perfection of its details is best seen at Essen, in Rhenish Prussia, in the monster works of Mr. Krupp, since here the manufacture may be followed from the refining of the crude ore up to the finishing stroke and proof of the completed gun—while at the London Ordnance Works of Vavasseur, only the processes of assembling, rifling, etc., can be studied, the various parts being roughly prepared in Sheffield, at the steel works of Firth. Mr. Krupp's great establishment, originally designed for the production of rolling stock, rails, crank shafts, etc., has within the last decade been gradually so changed in its character as to now render it practicable to employ almost the entire force of mechanics in the fabrication of ordnance and artillery. An idea of the immense facilities here for turning out work may be formed from the following statistical statement:

The works cover an extent of about 700 acres, 300 of which are under roof, and employ 8,000 men; besides which, in the Krupp coal mines near Essen, and in the iron pits and blasting furnaces on the Rhine, 2,000 men are constantly at work providing material for the use of the establishment, which possesses for the consumption and manufacture of the products of the mines 480 smelting, reverberatory, and cementing furnaces; 247 steam engines, from 2 to 1,000 horse power; 54 steam hammers, from 1 to 50 tons weight; 169 forges, 331 lathes, 61 cutting and shaping machines, 93 grinding machines, and furnaces to accommodate 1,600 crucibles, of 70 to 75 lbs. capacity each.

With these appliances, ingots can be cast and worked from the size required for a file blade up to that of 110,000 lbs. weight, used in the 14-inch gun—thus representing a capacity three times that of the largest steel works in England.

The metal used in the Krupp gun is crucible cast steel, made from a combination of puddled steel and pure wrought iron, which forms the charge of the crucible. The proportions of each, manner of preparation, etc., are not made known, as the secret by means of which Mr. Krupp produces a metal fully equal in elastic and absolute strength to the best of

the top. Every precaution possible is taken to insure homogeneity in the casting; for unless steel be absolutely sound in the ingot, no amount of hammering or pressing will make it so, as the bubble holes caused by air or gas become sealed without being removed, and all subsequent treatment simply presses them out into long slits, more objectionable than the original defect,

short lengths of the required weight and formed into rings without weld, the pieces being split down the centre to a certain distance from either end, and swedged out under a heavy hammer to the desired shape, after which they are annealed and finished by lathe work. The Krupp gun consists (fig. 4) of a central tube, A, and of series of encircling hoops, B, C, etc.—the 6-inch having one set, the 8 and 9-inch two, and the 11-inch and higher calibres, three. The tube, comprising the greater mass of the gun, is of cylindrical form, with walls eight-tenths of a calibre thick from a point over the middle of the charge to that at which the rings terminate; thence to the muzzle it is conical, diminishing to one-half calibre.

The hoops, shrunk on at a black heat, are prevented from working on the tube or inner layers by key rings, A, A, fig. 4, which are half hoops laid into scores cut to receive them.

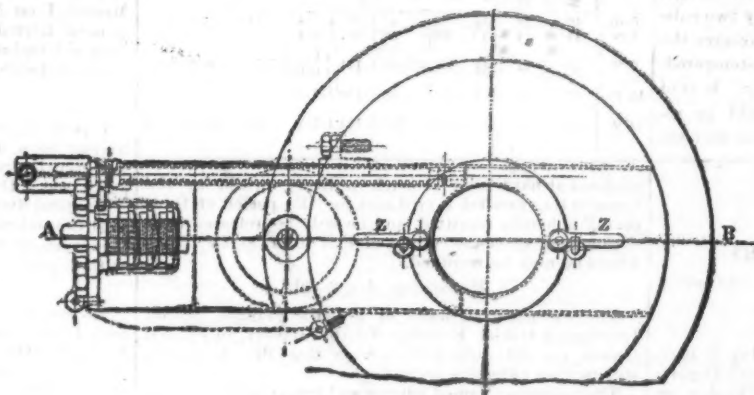
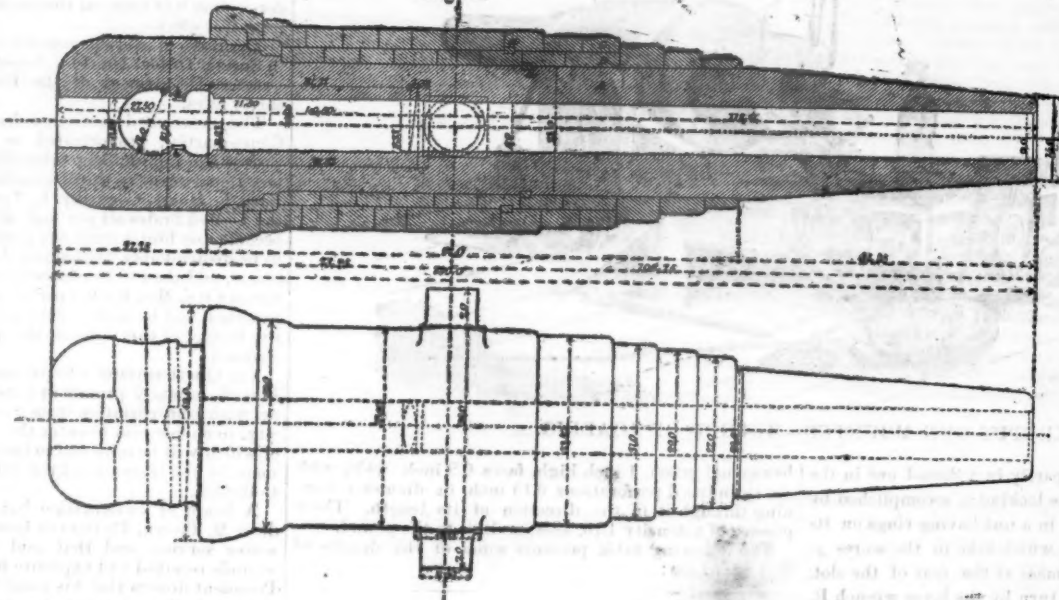
The rifling is poly-grooved, the two sides of each groove being of different pitch, by which means the width

of the grooves is made to diminish as they approach the muzzle, or what is the same thing, that of the bands increases, thus insuring complete suppression of windage as the soft-jacketed projectile passes along the bore. The chamber in which the shot and charge rest when the gun is loaded is of greater diameter than the bore, and its axis is excentric to and above that of the rifled part. This is done to give desired working room and still retain the axis of the projectile as a prolongation of the axis of the bore, for by this the course of the shot, from the instant it is put in motion, until it leaves the gun, is rectilinear, not being canted upward in passing from a tube of greater to one of less diameter, thus abrading its jacket, and at the same time allowing gas to escape by it, which occasions loss of power as well as scoring and damaging of the gun, an action which in a perfect breech-loader is entirely prevented by the gas-tight joint formed by the projectile when properly centred.

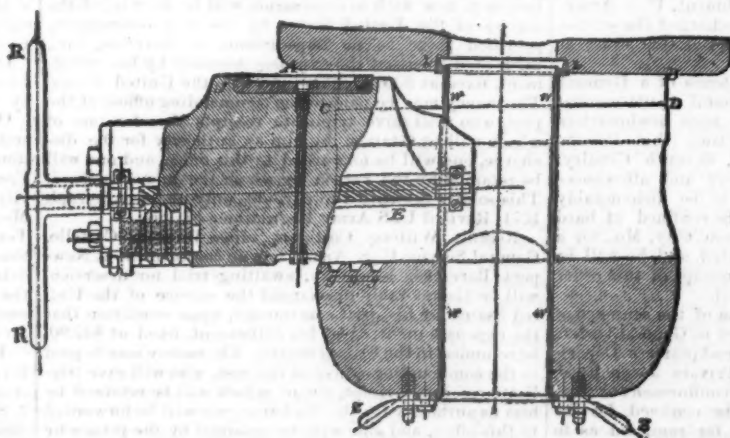
The most important detail in the construction of a breech-loading gun is an efficient and durable gas check; and this has been successfully applied in large guns by Mr. Krupp alone. The rear of

Krupp's 9th Gun.

Fig. 4.

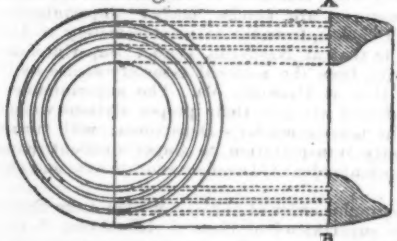


When needed for use, it is brought to the required heat in an ordinary furnace, and drawn out to the proper length under a hammer, one of 50 tons weight being used



Broadwell's Steel Gas Ring.

Fig. 3.



English cementation steel, and that too without oil-tempering, lies somewhere in the preparation of the elementary substances, or in the combination of them formed in the crucible. Only this is known: The wrought iron is produced from hematite ores, both English and German; the puddled steel from the spathic ore of Siegen; while the Spiegeleisen, small quantities of which are used, is made from the long crystal variety of that ore found in Nassau. The ingots from which the various parts of the gun are formed are cast in cylindrical iron moulds, the metal being introduced at

for large ingots. After this the head containing the "piping" and all other defective metal is cut off, and the ingot thus drawn out again buried in ashes, where it gradually anneals, taking out all tension due to forging into shape. Ingots thus drawn out are, by the various processes of boring, turning, and rifling, converted into the tubes forming the inner structure of the gun, while those intended for use as hoops, trunnion bands, etc., are cut up into

segment, the advantage of that form being its ease of adjustment and the readiness with which it can be pushed into position by the breech-block should it become unseated. When the gun is discharged, the ring, being instantaneously expanded and at the same time pressed rearward with tremendous force, hermetically closes the tube of the piece and prevents all escape of gas. On its rear face are annular scores to take up residuum or oil from the face of the breech-block and



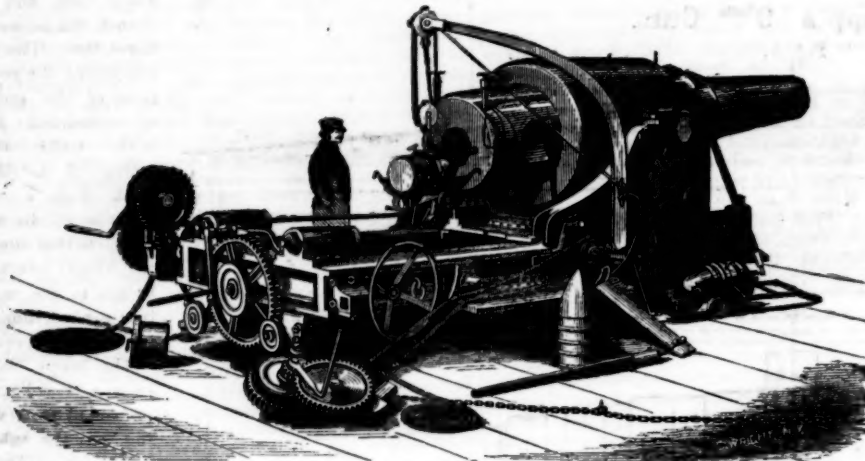
the chamber is reamed out spherically, and in this recess is fitted a Broadwell ring (fig. 3) whose exterior is also a spherical

thus avoid clogging. In the slot cut in the rear end of the tube to receive the mechanism, two guides, *b, b*, fig. 4, are left in relief, and in the breech-block grooves are formed to correspond. These stand at an inclination to the face of the slot formed by the breech of the gun, via the lines A B and C D, fig. 2, so that a motion of translation in or out gives to the front face of the block, at the same time, a movement forward or to the rear parallel to itself. The rear of the slot in the tube is cut on the same inclination as the guides, so that the block, whose front top and bottom are plane surfaces, its rear rounded off, is, when screwed in, well supported from behind.

The motion of translation is given to the block by the

turn on the striking of the shot, due to the flying off of the lead at the first instant of impact. After long experiment a plan has been devised by means of which practically no power is lost. The projectile, having been turned smooth on its cylindrical part, is placed in a bath of sal ammoniac to remove all oil, after which it is immersed in molten zinc, thence in lead, and afterward put in a mould where lead is run around it. It is then taken to a lathe, where the lead is turned down to a very thin coating, rings three to five in number, according to the calibre, being left on it, the rings being 0.1 inch and the spaces 0.05 inch thick.

The powder used in all the large guns is the prismatic, first suggested by General Rodman. Each grain is a



KRUPP'S GUN MOUNTED—METHOD OF LOADING.

screw E, fig. 2, which runs partly in a thread cut in the upper wall of the slot. The locking is accomplished by the screw A, fig. 1, working in a nut having rings on its exterior partially cut away, which take in the scores *g, g*, fig. 2, cut in the solid mass at the rear of the slot. These screws are worked in turn by the lever wrench R, fig. 2. The vent is through the breech-block in a prolongation of the axis of the bore, terminating in the face plate *f, f*, fig. 2.

Both steel and chilled iron projectiles are used in these guns for practice against armor. They are cylindro-ogival in form, with radius of head approximately two calibres. Those of steel are forged, bored out to receive the bursting charge, and have their points water-tempered. They are then jacketed by a process of soldering. It is of great importance that the weight of lead should be reduced to a minimum, in order to avoid loss of momen-

hexagonal prism, 1 inch high, faces 0.8 inch wide, with six cylindrical perforations 0.15 inch in diameter running through it in the direction of its length. These prisms, of a density 1.70, average 12+ to the pound.

The following table presents some of the details of this ordnance:

Calibre.	ROUGH TUBE		INGOT.		Weight of finished gun, tons.	Weight of projectiles, lbs.	Weight of powder charge, lbs.	RELATIONS.		No. grooves.	Twist 1 turn in inches.
	Weight, tons.	Diameter, in.	Weight, tons.	Diameter, in.				Weight of shot to gun.	Weight of powder to shot.		
6 in.	10	28	84	81	15	1-107	1-5.4	24	...	...	...
8 "	15	34	9	208	36	1-107	1-5.1	28	...	...	...
9 "	20	41	144	297	46 to 52	1-121	1-6.4 to 5.7	32	540 to 552	...	...
11 "	30	45	254	405	88	1-120	1-5.5	36	770 to 788	...	...
14 "	50	..	35	1000	185	1-124	1-5.3	40	980 to 1,014	...	...

THE ARMY.

ABSTRACT OF SPECIAL ORDERS

Issued from the Adjutant-General's Office for the week ending September 4, 1871.

Tuesday, August 29.

PARAGRAPH 1, Special Orders No. 185, May 9, 1871, from this office, directing the Quartermaster's Department to furnish transportation for Major B. Sheldon, an insane man, late private of Company F, Eighty-first New York Volunteers, and one attendant, from Mexico, N. Y., to Washington, D. C., and for the attendant back to Mexico, is hereby revoked.

Private John Williams, General Service U. S. Army, now with the Signal Service Detachment, U. S. Army, at Fort Whipple, Virginia, will be discharged the service of the United States upon the receipt of this order at the place where he may be serving.

The unexecuted portion of the sentence of a General Court-martial, promulgated in General Court-martial Orders No. 3, of January 20, 1870, from headquarters Department of the Missouri, directing that Private Heinrich Hunemeyer, Company C, Seventh Cavalry, "forfeit to the United States all pay and allowances now due or that may become due; to be dishonorably discharged from the service, and to be confined at hard labor in the penitentiary at Jefferson City, Mo., for a period of two years," is hereby remitted, and he will be released from confinement upon the receipt of this order at the place where he may be confined.

So much of the unexecuted portion of the sentence of a General Court-martial, promulgated in General Orders No. 27, of October 24, 1870, from headquarters Department of the Lakes, as directs that Private Jacob Ence, Company G, First Infantry (now in confinement at Fort Columbus, New York Harbor), "be confined for the period of two years," is hereby so far remitted as to make the term of his confinement one year, commencing October 24, 1870 (the date of the promulgation of his sentence in orders.)

The unexecuted portion of the sentence of a General Court-martial, promulgated in General Orders No. 125, of June 28, 1869, from headquarters Fifth Military District, directing that Private Dennis Morgan, Company H, Ninth Cavalry (now in confinement in the penitentiary at Little Rock, Ark.), "be dishonorably discharged the service of the United States, to forfeit all pay and allowances that are or may become due him, and to be

confined at hard labor at such military prison as the commanding general may direct for the period of three years," is hereby remitted, and he will be released from confinement upon the receipt of this order at the place where he may be confined.

Wednesday, August 30.

The extension of leave of absence granted Second Lieutenant Daniel F. Stiles, Tenth Infantry, in Special Orders No. 261, July 5, 1871, from this office, is hereby still further extended sixty days.

The following named officers will report without delay to the commanding officer Department of Arizona for duty as aides-de-camp on his staff: Second Lieutenant William J. Ross, Twenty-first Infantry; Second Lieutenant John G. Bourke, Third Cavalry.

Private Edward McCue, Company G, Seventeenth Infantry, now with his command, will be discharged the service of the United States by his post commander, provided there be no impediment, as desertion, etc., upon condition that the expenses incurred by his enlistment, fixed at \$56 73, be refunded to the United States. The money may be paid to the commanding officer of the post, who will give triplicate receipts therefor, one of which will be retained by him as authority for the discharge, one will be forwarded to this office, and one will be retained by the person by whom the money is paid. This soldier is entitled to pay, etc., only under paragraph 1371, Revised U. S. Army Regulations of 1863.

Recruit William Costigan, alias William Costello, General Service U. S. Army, now in confinement at Newport Barracks, Kentucky, awaiting trial for desertion, will be dishonorably discharged the service of the United States by his post commander, upon condition that the expenses incurred by his enlistment, fixed at \$57.90, be refunded to the United States. The money may be paid to the commanding officer of the post, who will give triplicate receipts therefor, one of which will be retained by him as authority for the discharge, one will be forwarded to this office, and one will be retained by the person by whom the money is paid.

The Quartermaster's Department will furnish John Dignan, formerly Corporal of Company H, Sixteenth Infantry, with transportation from Paducah, Ky., to this city, to enable him to enter the Soldiers' Home, the cost of which will be refunded to the Quartermaster's Department by the treasurer of the Soldiers' Home, District of Columbia.

A board of examination having found Captain George B. Hoge, Twelfth Infantry, incapacitated for active service, and that said incapacity does not result from

long and faithful service, nor from wounds or injury received in the line of duty, nor from sickness or exposure therein, nor from any incident of service, the President directs that in accordance with section 17 of the act of August 3, 1861, he be wholly retired from the service with one year's pay, and that his name be henceforward omitted from the Army Register.

First Lieutenant Abner H. Merrill, First Artillery, will report in person without delay to the superintendent General Recruiting Service, Eastern Division, to accompany a detachment of recruits to the Department of the South. On completion of this duty Lieutenant Merrill will rejoin his proper station.

Leave of absence for three months, to take effect from the 1st proximo, is hereby granted Assistant Surgeon William J. Wilson.

Thursday, August 31.

Captain John Williams, Twenty-fifth Infantry, will report in person without delay to Major-General George G. Meade, president of the retiring board convened at Philadelphia, Pa., by Special Orders No. 201, May 23, 1871, from this office, for examination by the board, under section 6 of General Orders No. 2, January 14, 1871, from this office.

The leave of absence granted Surgeon Madison Mills in Special Orders No. 165, August 4, 1871, from headquarters Department of the East, is hereby extended thirty days.

The unexecuted portion of the sentence of a General Court-martial, promulgated in General Court-martial Orders No. 158, of September 26, 1868, from headquarters Department of the Missouri, directing that Sergeant Basil E. Moore, Company L, Tenth Cavalry, "forfeit to the United States all pay and allowances now due or to become due him, except the just dues of the laundress; to be dishonorably discharged the service of the United States, and then to be confined in the penitentiary at Jefferson City, Mo., for the period of four years," is hereby remitted, and he will be released from confinement upon the receipt of this order at the place where he may be confined.

The Quartermaster's Department will furnish Edward Farrell, formerly private of Company D, Second Artillery, with transportation from San Francisco, Cal., to this city, to enable him to enter the Soldiers' Home, the cost of which will be refunded to the Quartermaster's Department by the treasurer of the Soldiers' Home, District of Columbia.

A board of examination having found Captain Andrew M. Brown, Thirteenth Infantry, "incapacitated for active service, and that said incapacity results from wounds received and exposure in the line of duty," the President directs that his name be placed upon the list of retired officers of that class in which the disability results from long and faithful service, from wounds received or from sickness or exposure in the line of duty, in conformity with sections 16 and 17 of the act of August 3, 1861.

Paragraph 1, Special Orders No. 339, August 30, 1871, from this office, directing First Lieutenant Abner H. Merrill, First Artillery, to report to the superintendent General Recruiting Service, Eastern Division, to accompany a detachment of recruits to the Department of the South, is hereby suspended until further orders.

Friday, September 1.

Private George Verrey, Company C, Seventh Infantry, having been appointed hospital steward U. S. Army, will report by letter to the commanding general Department of Dakota, for assignment to duty.

Hospital Steward Joseph O'Brien, U. S. Army, now at Fort Columbus, New York Harbor, will be discharged the service of the United States on receipt of this order at that post.

Saturday, September 2.

So much of Special Orders No. 278, paragraph 3, of July 18, 1871, from this office, as directs that Private James H. Hooper, Company K, Fourth Infantry, now with his command, be discharged the service of the United States, upon condition that the expenses incurred by his enlistment, fixed at \$48 42, be refunded to the United States, is hereby revoked.

Private James H. Hooper, Company K, Fourth Infantry, now with his command, will be discharged the service of the United States upon the receipt of this order at the place where he may be serving. This soldier is entitled to pay, etc., only under paragraph 1371, Revised U. S. Army Regulations of 1863.

On the recommendation of the Chief of Engineers, First Lieutenant James C. Post, Corps of Engineers, is hereby assigned to duty with the Battalion of Engineers.

On the recommendation of the Quartermaster-General, the following transfers of superintendents of national cemeteries are hereby made: Superintendent Francis O'Donohoe, from the national cemetery at Danville, Va., to that at Nashville, Tenn.; Superintendent Morris Keim, from the national cemetery at Nashville, Tenn., to that at Danville, Va. The superintendents thus transferred will join their proper stations without delay. The Quartermaster's Department will furnish the necessary transportation to Superintendent Keim, and to Superintendent O'Donohoe and his wife and children.

The telegraphic order of the 31st ultimo from this office, to the superintendent General Recruiting Service (Eastern Division), suspending for the present paragraph 2, Special Orders No. 276, July 15, 1871, from this office, directing thirty-one recruits to be sent to Batteries E and H, Third Artillery, is hereby confirmed.

As soon as the recruits ordered by paragraph 2, Special Orders No. 301, August 3, 1871, from this office, to be sent to the Seventh Infantry, in the Department of Dakota, have been forwarded, the superintendent General Recruiting Service (Western Division) will prepare a detachment of one hundred recruits from those which are or may from time to time become disposable at the depot and forward it, under proper charge, to Fort Gibson, Indian Territory, where it will be reported upon arrival to the commanding officer Sixth Infantry, for as-

assignment to his regiment. The Quartermaster's Department will furnish the necessary transportation.

Monday, September 4.

The following-named enlisted men will be discharged the service of the United States upon the receipt of this order at the places where they may be serving: Private Hiram L. Johnson, Company A, Ninth Infantry; Sergeant R. L. P. Reifensider, General Service U. S. Army, now with the Signal Service Detachment, U. S. Army, at Fort Whipple, Virginia.

Leave of absence for twenty days in addition to the three months granted to the graduates of the Military Academy by paragraph 181, Army Regulations, is hereby granted Second Lieutenant Ulysses G. White, Fourth Cavalry.

Upon the recommendation of the Surgeon-General, leave of absence for four months is hereby granted Assistant Surgeon Henry McElderry.

ARMY PERSONAL.

LEAVE of absence for fifteen days was granted Acting Assistant Surgeon R. H. McKay, U. S. Army, August 26.

LEAVE of absence for ten days was granted First Lieutenant Henry Romeyn, Fifth Infantry, to date from the 24th instant.

LEAVE of absence for ten days was granted September 4 to Second Lieutenant C. M. Baily, Eighth Infantry, by orders from headquarters Department of the East.

THE extension of leave of absence granted Lieutenant-Colonel H. D. Wallen, Eighth Infantry, from the headquarters Department of the East, was extended seven days September 4.

SECOND Lieutenant James Rockwell, Jr., regimental adjutant, First Cavalry, was ordered August 28 to report for duty to headquarters of his regiment, Benicia Barracks, California, without delay.

THE following officers reported at headquarters Military Division of the Pacific, for the week ending August 29, 1871: Surgeon H. R. Wirtz, U. S. Army; First Lieutenant D. Sherman, First Cavalry.

THE leave of absence for seven days granted September 4 to Chaplain O. E. Herriek, U. S. Army, in Orders No. 149, headquarters Fort Warren, Massachusetts, August 30, 1871, was extended fifteen days by orders from headquarters Department of the East, September 4.

MAJOR Rodney Smith, paymaster U. S. Army, has been ordered to make payments to August 31, 1871, of the troops stationed in the District of Minnesota, comprising the garrisons of Forts Snelling, Ripley, Abercrombie, Wadsworth, Ransom, Totten, and Pembina.

COLONEL Thomas H. Ruger having relieved General Pitcher from duty as superintendent of the Military Academy at West Point, the latter will at once take charge of the Soldiers' Home in Washington as governor. Colonel Lee, the former governor, remains at the Home as lieutenant-governor.

THE following officers were registered at headquarters Department of the East, for the week ending September 5, 1871: Major P. T. Swaine, Second Infantry; Captain A. C. Wildrick, Third Artillery; Captain S. P. Ferris, Fourth Infantry; Second Lieutenant John A. McKinney, Fourth Cavalry; Assistant Surgeon Harvey E. Brown, U. S. Army.

AN observatory has been erected under the superintendence of Lieutenant Rufner, chief engineer on General Pope's staff, at Leavenworth, Kan., to work in conjunction with the lake survey at Detroit, Mich. A telegraphic connection between the places named has been made, and the lieutenant is only awaiting favorable weather at Detroit to begin his observations.

THE board of officers instituted for the purpose of inspecting and receiving from the contractors, the public buildings in process of erection at Fort Totten, Dakota Territory, was dissolved by orders from the headquarters Department of Dakota, July 28, and a board of officers to consist of Lieutenant-Colonel L. C. Hunt, Captain J. H. Patterson, and Captain J. N. Coe, Twentieth Infantry, constituted for the same purpose.

A GENERAL Court-martial was appointed to meet at Fort Hays, Kansas, September 5. Detail for the court: Captain D. H. Brotherton, Fifth Infantry; Captain G. E. Head, Third Infantry; Captain E. P. Ewers, Fifth Infantry; First Lieutenant D. A. Griffith, Third Infantry; First Lieutenant J. H. Sands, Sixth Cavalry; Second Lieutenant C. E. Hargous, Fifth Infantry; Second Lieutenant G. E. Overton, Sixth Cavalry. Second Lieutenant Theodore F. Forbes, Fifth Infantry, judge-advocate.

A GENERAL Court-martial was appointed to meet at the Cavalry Depot, St. Louis, Mo., on Monday, the 4th day of September. Detail for the court: Colonel Edward Hatch, Ninth Cavalry; Surgeon D. L. Magruder, U. S. A.; Captain S. M. Whitside, Sixth Cavalry; First Lieutenant Moses Harris, First Cavalry; First Lieutenant P. D. Vroom, Third Cavalry; First Lieutenant C. P. Rodgers, Fifth Cavalry; First Lieutenant Oscar Elting, Third Cavalry. First Lieutenant A. G. Forse, First Cavalry, judge-advocate.

LEAVE of absence for twenty days was granted Second Lieutenant W. W. Wood, Twentieth Infantry, and for thirty days to First Lieutenant James Joyce, Seventeenth Infantry, by orders from headquarters Department of Dakota, August 29, with permission to apply through the proper channels for an extension of thirty days. Lieutenant Wood's leave to take effect when a subaltern shall be available at the post to relieve him of

his duties as acting assistant quartermaster and acting commissary of subsistence.

PAYMASTER Simeon Smith, U. S. Army, was ordered August 29 to pay the troops at the following-named posts; upon the completion of which duty he will return to his station at Buffalo, N. Y.: Fort Porter, New York; Fort Niagara, New York; Fort Ontario, New York; Madison Barracks, New York. Paymaster V. C. Hanna, U. S. Army, will proceed to and pay the troops at the following-named stations, upon completion of which duty he will return to his station in Detroit: Columbus Arsenal, Columbus, O.; Indianapolis Arsenal, Indianapolis, Ind.

THE following is a memorandum of orders relating to the officers of the Corps of Engineers, issued during the month of August, 1871: Major Prime—Ordered to report by letter to Major-General Meade, president of retiring board convened at Philadelphia, and to hold himself in readiness to appear before the board of examination. Lieutenant-Colonel Alexander, Lieutenant-Colonel Stewart, and Major Williamson—Board of engineers to assemble in San Francisco to consider and report upon the practicability of improving the entrance to Humboldt Bay and Eureka Harbor, Cal.; First Lieutenant Handbury to act as recorder. Lieutenant-Colonel Woodruff, Major Warren, and Major Houston—Board of engineers to assemble in Chicago, August 16, to take into consideration the plans for docks in the basin now being formed by the construction of the U. S. breakwater in that harbor, which docks are proposed to be built by the Illinois Central R. R. Company, etc. Lieutenant-Colonel Reynolds—Confirms telegraphic order of same date granting leave of absence for twenty days. Major Gillmore—Member of board of officers to assemble at Battery Hudson, Staten Island, N. Y., for the purpose of testing "King's" depressing gun-carriage for 15-inch barbette guns. First Lieutenant Sears—To take station temporarily at Wilmington, Cal. First Lieutenant Brown—To take station temporarily at Lewes, Del. Captain Twining, Captain Mackenzie, Captain Raymond, First Lieutenant Davis, Second Lieutenant Hinman, and Brevet second lieutenant Willard—Detailed as members of a General Court-martial to meet at Willet's Point, New York Harbor, August 17; First Lieutenant W. H. Heuer appointed judge-advocate. Captain Burnham—Granted leave of absence for thirty days. Additional Second Lieutenant Marshall—Relieved from duty at the Military Academy, to take effect August 31, and to report to the Chief of Engineers for orders. First Lieutenant Post—Relieved from duty at the Military Academy, to take effect September 1, and to report to the Chief of Engineers for orders. Additional Second Lieutenant Marshall—To report to commanding officer Battalion of Engineers for temporary duty. By direction of the Secretary of War those officers of the Corps of Engineers termed "brevet second lieutenants" will be borne on the Army Register hereafter as "additional second lieutenants."

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE, }
WASHINGTON, August 29, 1871. }

General Court-martial Orders No. 15.

I. Before a General Court-martial which convened at Fort Concho, Texas, July 10, 1871, pursuant to Special Orders No. 114, dated June 6, 1871; No. 125, dated June 19, 1871; and No. 131, dated June 26, 1871, headquarters Department of Texas, San Antonio, Texas, and of which Colonel Abner Doubleday, Twenty-fourth Infantry, is president, was arraigned and tried Second Lieutenant Charles L. Snow, Eleventh Infantry.

Charge—"Conduct unbecoming an officer and a gentleman."

Specification—"That he, the said Second Lieutenant Charles L. Snow, Eleventh Infantry, U. S. Army, did have criminal intercourse with the wife of [an officer of the] U. S. Army. This at Fort Concho, Texas, between the 17th day of July, 1870, and the 31st day of December, 1870."

To which charge and specification the accused, Second Lieutenant Charles L. Snow, Eleventh Infantry, pleaded as follows:

To the specification, "Guilty."

To the charge, "Not guilty."

Finding—The Court, having maturely considered the evidence adduced, finds the accused, Second Lieutenant Charles L. Snow, Eleventh Infantry, as follows:

Of the specification, "Guilty."

Of the charge, "Guilty."

Sentence—And the Court does therefore sentence him, Second Lieutenant Charles L. Snow, Eleventh Infantry, "To be dismissed the service."

II. In conformity with the 65th of the Rules and Articles of War, the proceedings of the General Court-martial in the foregoing case have been forwarded to the Secretary of War and by him submitted to the President of the United States, and the proceedings, findings, and sentence are approved. The sentence will be duly executed.

III. Second Lieutenant Charles L. Snow, Eleventh Infantry, accordingly ceases to be an officer of the Army from the date of this order.

By order of the Secretary of War.

E. D. TOWNSEND, Adjutant-General.

CHANGES OF STATIONS.

The following is a list of the changes of stations of troops reported at the War Department since last report:

Headquarters Twenty-first Infantry ordered from Drum Barracks, Cal., to Fort Yuma, Cal., August 17.

Headquarters and Batteries C and I, Third Artillery, ordered temporarily from Charleston, S. C., to Summerville, S. C., on account of the yellow fever, August 27.

No change in headquarters or stations of companies of cavalry reported at this office since August 29.

THE appointment of Colonel J. C. De Gress, by Governor Davis of Texas, as superintendent of public instruction, we are glad to see, has been endorsed by the press and people of the State as one "eminently fit to be made." The legislative enactment which makes general education compulsory, and appropriates a very large sum of money for the erection of school-houses, purchase of books, etc., in the munificent character of its provisions has not been surpassed by any kindred action at the North. To organize the educational system thus endowed and render practical the generous provisions of the new law requires no common experience, judgment, and executive ability. Colonel De Gress is a young man, yet we question if a search over the whole Union would have found a more satisfactory administrator of the noble aims of Texas. His Army record alone should commend him for any position calling for intelligence and determination. Entering the Union ranks as aide-de-camp to General Sweeny, and taking a prominent part in the battle of Springfield, Mo.; wounded at Vicksburg; a captain at the head of a regiment, again wounded in the severe fight of "Yellow Bayou" during the Red River expedition; from 1864 to the close of the war on the staff of General Mower, and an actor in all the battles of Sherman's march; afterwards serving under Mower, Gregory, and Kiddoo in Louisiana and eastern Texas as provost-marshal-general, and assistant commissioner of the Freedmen's Bureau, in which last capacity he established the local schools for freedmen throughout his wide command, he was retired with the rank of captain, "on account of severe wounds received during the war," in December last. During the last six years Colonel De Gress, as a resident of Texas, has earned a reputation and popular esteem in the State. A brother of Colonel De Gress, Major Francis De Gress, was likewise a valued Union officer, his accomplishments as an artillerist winning the highest professional commendation at Vicksburg and during Sherman's closing campaign.

GENERAL Ambrose E. Burnside on the afternoon of September 5 paid a visit to the Union Home and School for the Orphans of Soldiers and Sailors, at Carmanville, where he was formally received by the lady manager and directors, and by General Alexander Shaler and others. As General Burnside entered, the lady who presided at the organ struck up "Hail to the Chief." As soon as all were seated General Wetmore proposed that the children give three cheers for General Grant, which were given with a will. Then the children sang some songs, after which General Wetmore made a short speech introducing General Burnside. The General's speech was brief, expressive of his happiness at seeing them so well cared for and so happy. He told them that they were the nation's wards, and that the nation would see that they were properly cared for. Three cheers and a tiger were given for General Burnside, and General Shaler was introduced, made a very happy speech, and was rewarded by three cheers. Colonel Pell followed, and after these exercises were concluded the visitors were shown through the house, and everything betokened comfort and discipline. The boys were drilled by their commanding officer in front of the building, and were reviewed by General Burnside from the balcony. A banquet concluded the entertainment.

A CORRESPONDENT offers us the following contribution to the literature of brevet rank:

When the order was issued to the Army announcing the new law of Congress regulating brevets, much trouble was experienced by commanding officers of posts in explaining the new etiquette. But every one at Fort Clark, Texas, understood at once General H—'s solution of the new custom. General H—, a distinguished son of Maine, summoned all his officers to headquarters, and said: "If any officer or soldier of this garrison addresses me *officially* by my brevet title, I will court-martial him; but if any officer or soldier *privately* or *off duty* fails to address me by my brevet title, I will mash his head!"

ANOTHER number of the professional papers of the Corps of Engineers, U. S. Army, treating on the fabrication of iron for defensive purposes, and its uses in modern fortifications, has been prepared, and is soon expected from the Government printer. The information upon which these papers are based was obtained in England, France, Belgium, Prussia, and other foreign countries. The report on the solar eclipse of December, 1870, will soon be issued from the Naval Observatory. The English Government has proposed to the United States to send a joint expedition to Ceylon to observe an eclipse that will occur there on December 11, 1871.

THE Columbia, S. C., Union of September 3 says a gentleman from Washington, N. C., states that as he passed Greensboro, N. C., he saw sixteen Ku-Klux in charge of United States troops, the commanding officer of whom told him that about sixty more were about to be arrested. Those under arrest, one of whom was said to be a member of the North Carolina Legislature, were taken before the United States Commissioner.

THE autumnal manoeuvres of the military under the British War Department were successfully inaugurated September 5. A force of thirteen thousand men marched from the camp at Aldershot to Sandhurst, where they pitched tents, cooked and ate a meal, and rested a short time. Tents were then struck, and the troops returned cheerfully to Aldershot. The distance accomplished was eighteen miles.

THE NAVY.

The Editor invites for this department of the JOURNAL all facts of interest to the Navy, especially such as relate to the movements of officers or vessels.

VARIOUS NAVAL MATTERS.

THE Shenandoah was at Messina, Italy, September 1. **ADMIRAL** Porter, who has been confined to his house for several weeks past by sickness, is improving slowly, and is now able to devote some attention to his official duties daily.

A DESPATCH dated St. Petersburg, September 3, 1871, announces that the Grand Duke Alexis sailed on that day from Cronstadt in the frigate *Svetland* for the United States.

THE U. S. steamer Omaha is at the Philadelphia Navy-yard undergoing equipment. The *Iroquois* has lately returned from her trial trip, which was very satisfactory, and is preparing for a cruise to the East Indies. The *Kansas* lately arrived from Portsmouth, N. H., and is undergoing certain repairs previous to joining the North Atlantic squadron on special duty.

GOVERNOR Cooke of the District of Columbia has received from Secretary Robeson a reply to the resolution of the Legislative Assembly, respecting the desired removal of the naval powder magazine near the Congressional Cemetery to some locality outside the limits of the city. The Navy Department referred the subject to the Bureau of Ordnance, and the chief of that bureau reports that he approves, and will unite with the District authorities in requesting Congress to make the appropriation necessary for the purchase of a suitable location and erection of a building outside of the city for a naval powder magazine.

THE Iroquois returned to the Philadelphia Navy-yard on the morning of September 1 from her trial trip, which commenced August 26. She will remain at the Navy-yard until she receives regular orders. Commander Henry A. Adams, Jr., is in command. When the war was over, the *Iroquois* was assigned to the Asiatic squadron, and in 1869 she returned to our Navy-yard for repairs. She is now in splendid condition; her present armament being four 9-inch Dahlgren guns, one 11-inch pivot, and three 20-pound Dahlgren rifles. It is understood that she is intended for service in the East Indies.

A BOARD of naval officers, consisting of Commodore Case, chief of the Ordnance Bureau, Captain Ammen, chief of the Bureau of Yards and Docks, Naval Constructors Hanscom, Lenthall, and Delano, have been in session at the Navy Department, Washington, for several days to determine upon the plans for the new torpedo boats which were authorized at the last session of Congress. The sum appropriated for these vessels will not be sufficient, and another appropriation for their completion will be asked at the next session. They are to be constructed with a submerged iron prow extending fifteen or twenty feet in front, upon which the torpedo will be placed so as to explode upon striking an enemy's vessel. They will be built with a special view to making headway, and will carry no guns of large calibre.

THE torpedo boat, which will be built at the Washington Navy-yard, is to be named the *Robeson*. It will be 175 feet long, with 35 feet beam. Her hull will be of iron, only three feet of which will be out of water. This exposed part, however, will be armor-plated with five-inch iron, backed with wood. She will be propelled with two screws, and her engines are expected to drive her at fourteen knots per hour minimum speed. The only rigging she will have, which is a fair-weather arrangement altogether, will consist of two masts, schooner-rigged. The boat will be of comparatively light draught, requiring only eleven and a half feet of water. The torpedo will contain 100 pounds of powder, attached to an iron beam, which will protrude from the bow below water line. This beam will be twenty-five feet long and so adjusted as to be forced out by hand from a water-tight compartment through packing. It will be worked by hand. It is intended, when orders are given to that effect, that the torpedo boat shall make straight—under a full head of steam—for an enemy's ship and run well under her, and explode the same by electricity, the beam being withdrawn at the same time.

The following despatch was telegraphed to the daily papers from San Francisco, on the arrival of the last Pacific mail steamer: "The British war steamer *Ringdove* had returned from Corea with the two Englishmen captured by the Koreans from the wreck of the *Chusan*. They had been kindly treated; no indignity had been offered to them. The German, reported by the Chinese as having been captured at the same time, was found to have left with the Chinese, and it is supposed that the Chinese murdered him and invented the story of his capture by the Koreans to conceal their own crime. The Shanghai papers publish an authenticated letter from the Korean government to the commander of the U. S. steamer *Wachusett*, when that ship went up the river in 1868, to inquire after the crew of the ship *General Sherman*. The letter is friendly and conciliatory to the last degree, and had it been received by the commander at the time it was intended to reach him, the subsequent bloodshed would never have occurred. The letter was delayed for a few hours, and meanwhile the *Wachusett* sailed without it. The German iron schooner *Volador* has been wrecked in the Korean straits. The crew escaped in boats, and were picked up after suffering great hardships."

A CORRESPONDENT, writing from San Francisco, August 29, 1871, informs us that "the *California*, first-rate, flag-ship of Admiral Winslow; the *Sarandee*, third-rate; *Mohican*, fourth-rate; *Cyane*, fifth-rate, were at the Mare Island Navy-yard in commission August 29. The *Lackawanna*, third-rate, and *Kearsarge*, fourth-rate, are repairing. The *Pensacola*, *Dakota*, *Nyack*, and *Vanderbilt* are laid up. The *Narragansett*, fourth-rate,

has not yet arrived (163 days out from Sandy Hook). The *California's* time beats any man-of-war's time that ever came from New York here, and compares with, if not beats, the time of many clipper ships. The ship *California*, that left New York the day the U. S. steamer *California* did, has not arrived yet (170 days out to-day). Captain Clitz, his officers and men, are highly pleased with their remarkable passage. The *California* went out of her way several miles by going into Callao, and with nine days' stop at Callao arrived and anchored off the Mare Island Navy-yard Sunday, July 30, just 139 days from New York. (Beat that time who can!) The *California* one day during her trip made 376 miles under canvas alone; she steamed 12 knots on the average, and often made 13 or 14 knots under sail. The *California* sailed the entire distance from New York to San Francisco, except steaming through the Straits of Magellan and in and out of Callao. A Naval General Court-martial is in session here, composed of the following officers: Captain Paul Shirley, fleet captain, president; First Lieutenant H. J. Bishop, U. S. Marines, judge-advocate. Members—Lieutenant-Commanders Sands and Cook, U. S. Navy; Captain Pope, U. S. Marines; Lieutenants Miller, Berry, and Peck, Masters Ames and Garst, U. S. Navy. The court has a large number of cases to try."

THE Navy Department received August 31, from Admiral Rodgers, the battle flags which were captured by the late naval expedition to Corea. They number twenty-one standards and pennants, together with four staffs from which the colors had been torn. The banners present every variety of color and design, but still indicate some method and arrangement. The flag of the commanding general and those of the principal officers are of flowered silk, and those of subordinate officers of cotton, the latter closely woven and a credit to the native looms. The staffs are nearly alike for all the specimens. They are from six to eight feet long, and shod at the foot with iron, that they may be driven into the ground. The head of the staff is ornamented with a bit of carved wood, painted in brilliant colors, and capped by a rim of brass. The middle of each staff is painted with a series of white and black rings, which seem to indicate by their number some rank or station. The staff of the flags representing the superior officers is surmounted by a bunch of pheasant's feathers, those of another rank by a flat piece of iron fancifully cut, and others have no mounting whatever. The flags generally are a square of one color, surrounded with a border of another color. A few smaller and what appear to be inferior flags are of two equal stripes of different colors. The interior square of the flags of the superior officers bears the representation of some flying animal—flying serpent, dragon, turtle, etc.—printed in brilliant colors, and not badly drawn. The flag of the Korean commanding general is of fine yellow silk, with figures representing a tiger rampant, and surrounded with a border of green silk. Its captor was George Catemen, private marine of the *Colorado*, and he made a request that it should be presented to the President. No. 2, bearing the representation of a dragon, is of plain blue silk bound with black; its captor was seaman Michael Thomas of the *Colorado*. No. 3 is of black silk, with a representation of a flying turtle. It is badly torn by shell and bullets. It was captured by Ship's Corporal John McDewitt of the *Alaska*. No. 3 is of yellow silk, trimmed with brown. To its centre are sewed two hieroglyphics of card-board, covered with silk. It was captured by Ordinary Seaman Ed. Heintze of the *Colorado*. No. 4 is of plain light blue silk, ornamented in the same manner. It was captured by Landsman Mark Harris of the *Colorado*. No. 5 is of yellow silk bound with pale red silk, and bears the representation of a flying serpent. This flag is much torn by bullets. It was captured by Private Marine Lyons of the *Colorado*. The remaining flags are of cotton dyed in various colors. That captured by Private Marine Granville of the *Colorado* bears in Korean characters an inscription which, translated, reads: "The flag of the squad captain of the rear battalion of the regiment." Another, captured by Seaman McGregor of the *Colorado*, bears a representation in colors of an officer on horseback. That captured by Private Halpine, marine of the *Colorado*, bears a representation of a flying serpent. The cotton flag captured by Landsman Charles Johnson of the *Colorado* is stained with blood. It bears the representation of a turtle. The remaining flags are of colored cotton, and the labels attached honor the following names as their captors: Private Marine Cannon of the *Colorado*, flag stained with blood; Ordinary Seaman J. Brady of the *Benicia*; Landsman M. Anderson of the *Benicia*; Seaman James Milling of the *Colorado*; Landsman Max Fields of the *Colorado*; William Tate of the *Benicia*; A. Morris, captain mizzen-top of the *Colorado*; Private Marine John Davis of the *Colorado*; Seaman John Corcoran of the *Colorado*. Accompanying the flags are four pennants of silk and cotton of various colors, and printed with curious devices. Specimens of Korean spears, with little flags attached, resembling a guidon, were also received by the Department. Secretary Robeson will forward the entire lot to the Naval Academy at Annapolis.

THE DARIEN SURVEY.

REPORT OF CAPTAIN SELFRIDGE TO THE GOVERNMENT OF THE UNITED STATES OF COLOMBIA.

UNITED STATES STEAMER RESACA,
CHEPIGANA, TIURA RIVER, May 31, 1871.

To his Excellency Señor Eustorgio Salgar, President of the United States of Colombia, Bogota.

I CONSIDER it my duty to inform your Excellency of the general results obtained by the Isthmus of Darien exploring expedition for the opening of an interoceanic ship canal, which I have the honor to command.

This expedition, composed of two vessels of the United States Navy, sailed from New York in January, 1870, and arrived in the Bay of Caledonia in the month of February following. A vessel belonging to the Pacific Squadron was sent to co-operate on the Pacific coast.

From the port of Caledonia various observations were

made with instruments, and also from the port of Sarsardi toward the northern extremity, on two lines which terminated on the coast of the Pacific, in the confluence of the rivers Sabana and Lara. The first of these lines was to cross the Cordilleras, follow the valley of the Sucubti as far as the union of this river with the Chucunague, and then cross the Isthmus to the point fixed on in the Pacific. The second, starting from Sarsardi, crossed the Cordilleras in the neighborhood, and, following the valley of Morti, ended at the same point as the first.

These observations, carefully made with the air level, showed that both lines were impracticable for a ship canal. The Cordillera has not in any part a lower level than one thousand feet, and the extent of the area of the mountain is such as to render the construction of tunnels impossible. Nor does there exist a sufficient quantity of water to enable us to overcome the difficulties by means of locks.

The expedition sailed for the Bay of San Blas in the latter part of April. This route formed the narrowest part of the Isthmus, measuring only twenty-six miles from the Atlantic to the navigable river Bayamo, all of which gave me great hopes that the desired route would be found in this region. Explorations were accordingly made, following the valleys of the principal rivers which fall into the Bay of San Blas, notwithstanding the principal line followed the Mandingo up stream, crossed the Cordilleras and followed the Mamoni down stream to the confluence of the Bayamo or Chepo river, which up to this point is navigable. The results obtained were equally unfavorable along this line; the lowest level of the Cordillera in this region was found to be 1,134 feet, and there existed heights of 300 feet each side. This obstacle could not be overcome either by a tunnel or by locks, and to make an open canal would cost so much as to put all consideration of it out of the question.

It not being possible to continue the explorations during the rainy season, on the termination of the last expedition the expedition sailed for New York on the 10th of June, 1870. The disposition of the Indians in the interior was not found to be friendly. They refused us permission to pass through their territory, and we had to go through contrary to their will. The express orders given, to avoid all injury to their property, and taking always a superior force, avoided any hostile demonstration on their part.

The United States Government being desirous of including all of the Isthmus of Darien in this exploration in order to settle definitely the question of its adaptability for the construction of a ship canal, I received orders to continue the survey; and consequently the present expedition sailed in December last for the Gulf of Darien and anchored off the mouth of the Atrato river on the 30th of the same month.

The explorations of this year comprehended routes which follow certain tributaries of the Atrato, as well as a line said to have been discovered by M. Lucien de Puydt. From M. Truchon, French Vice-Consul, who accompanied M. de Puydt, I obtained the necessary data to follow the same route in which he pretended to have discovered a summit level of only eighty metres elevation. Your Excellency doubtless has heard of this route. I will not, therefore, go into any details about it. It is enough to say that no such pass exists as that pretended by M. de Puydt. A careful exploration, made with an exact mercurial barometer, showed an altitude of fifty feet in the valley of Tunela before arriving at the Cordilleras.

The principal labor of the expedition has been to explore a line beginning at the Atrato and following the valley of the Paranchita (a tributary of the Cacari), crossing the Cordilleras of Cue (a tributary of the Tium down stream, and from this point to Penogana, and thence to a navigable point. The total length is fifty-five miles, and the route is generally known as that of Tuira. The lowest point of the Cordilleras in this line, following the valley, was some 400 feet, but crossing about two miles to the southward of this point is an altitude of—feet, and the land is more uniformly level. The land throughout the whole extent of this line is broken and crossed by mountain spurs and hills every now and then of about 250 feet above the general level.

In like manner has been explored the whole length of a line extending from the bay of Cupica in the Pacific and following the valley of the Napipi to its mouth. By this route the ground is probably more level than by any of the others examined in Darien, but it has the drawback of requiring a longer line of navigation in the Atrato river against a strong current, and there is much doubt whether the river would or not prove navigable for ships above the mouth of Napipi.

Having finished these explorations, there did not remain any other part of the Isthmus to be examined, although these explorations have not entirely fulfilled the hopes of the United States Government nor my own; they have, nevertheless, been of great utility in having thrown much light upon a subject little known, and have also added to what was already known of the geography of Colombia.

I have been informed that there is a route by way of the river Bojaya, but I received the information too late to make use of it. It is impossible to continue the explorations during the rainy season; the work has exhausted my strength, and I am unable to begin anew. It is not likely, however, that this route would give better results than that by the Napipi; both rivers run at but a short distance from each other. Although the Bojaya is wider, canalization is not practicable on account of the frequent floodings caused by the tropical rains.

The routes that were examined last year—viz., that of the Tuira and the Napipi—are practicable for a canal, but at an enormous expense; the first would cost \$14,000,000, and the second \$110,000,000.

Before concluding, I beg to make a few observations. The United States of America are interested, to a certain extent, in the construction of a canal across the Isthmus, but the perfection of the railroad system across the continent has removed many inconveniences

with in the transit, and a canal is, therefore, now not so much of a necessity. England, with her possessions in the South Seas, and Germany, with her daily increasing commerce, have the same interests with the United States; but to the Republic of Colombia a canal across her territory would be an incalculable gain. The benefit she would derive from it does not so much consist in having a share of its profits as being placed in the most remarkably central portion of America. The cultivation of her great extension of lands and attraction for immigration cannot fail to bring great wealth to the country. The immense sums of money required in its construction, the great scientific problems to be solved, as well as the doubtful financial results of the Suez Canal, will all tend to make capitalists unwilling to undertake the work unless on the most favorable conditions.

The route by Nicaragua, from its immense water supply, and with an elevation of only 120 feet above the sea, is a formidable rival to all the lines I have yet examined. It becomes a serious question for the people of Colombia whether they had better grant liberal concessions to those who will construct a canal within their territory, in view of the immense benefit that must indirectly flow from it, or concede a privilege with the conditions which hitherto served as a base to previous proposals, losing, in consequence, a brilliant opportunity, and turning attention towards the advantages of the route through Nicaragua.

With sentiments of the most profound respect towards your Excellency, and the most sincere wishes for the prosperity of the Republic of Colombia, I have the honor, etc.,

THOMAS O. SELFIDGE,
Commanding the U. S. Darien Surveying Expedition.

STEERING WITH A PROPELLER.

[From the Buffalo Courier, September 1.]

A LARGE number assembled at Mr. David Bell's shipyard yesterday morning to witness the launch of the iron revenue steamer *Gallatin*, and their patience was rewarded with the sight of a successful launch. Although the time appointed was nine o'clock, it was not till eleven that the last block was knocked away, and the *Gallatin* gracefully and gently, but rapidly, slipped into the water. The christening was done in the usual manner, Miss Mary Bell breaking a bottle of champagne over the vessel's bow. One incident occurred which caused a great deal of amusement the moment after the boat reached the water. As she rolled over on her port beam she threw a large wave upon the wharf on the opposite side of the creek, drenching some forty men and boys thoroughly; and although an amusing scene to those on the near side, the bath was anything but agreeable to the unwary recipients. A moment later the *Gallatin* was on her keel and the water again still. This is the last of the six iron steamers built at this port the present year, all of which have been a credit to the builders and enhanced Buffalo's reputation for boat-building. Among the spectators were Captain J. W. White, U. S. Revenue Marine, superintendent of construction, and Lieutenant John Braun, U. S. Revenue Marine, assistant superintendent of construction. The former gentleman has had his residence in Buffalo nearly all the time since the laying of the keel of the *Gallatin*.

The *Gallatin* will have machinery similar to what is described below: The stern of the boat to which the machinery is now applied is out away underneath about as much as for the ordinary screw. The latter has a screw nearly horizontal, the shaft of the Fowler wheel is perpendicular in the stern, and the wheel works on a horizontal plane. This one has three arms, each with its adjustable blade. Experiments were made with four and two, but three were found to be most economical. The wheel is 4½ feet in diameter. The extremity of each arm is inserted by a movable joint in the centre of a thin, strong steel blade, standing perpendicular. The blades are 28 inches in depth, 12 inches at the top and 10 at the bottom, and slightly rounded at the counters. The blades stand with their sides toward the centre shaft. Above the arms there is an eccentric on the shaft, which is held fast as the wheel revolves. From the ring or strap around the eccentric strong rods extend to the outer edges of the blades. Now, as the shaft revolves, the blades, as they pass around the circle, change their set, so to speak—that is, the edge of a blade to which the eccentric rod is attached moves from and toward the shaft. As a blade moves forward it acts upon the water much as a man's hand does when he is swimming. It may be said to hook or hull upon the water and pull the boat forward. As the blade goes to the rear its angle upon the arm or radius is changed, and in passing around the rear of the shaft the blade drives the water to the rear, pushing the boat forward. In the revolution there are two points at which the blade is parallel with the keel and exerts no power.

We have described the boat as moving straight forward upon the line of the keel. The eccentric is governed by a wheel on deck, just like the ordinary steering-wheel. If it be desired to change the course of the vessel, the eccentric is shifted. This shifts the set of the blades, and the line of force exerted is put at any desired angle with the keel. In an instant, with a whirl of the wheel, the power is exerted at right angles with the keel, and the boat whirls round. Or without a word or signal to the engineer, this power is completely reversed and the wheel is pulling straight astern. In a few seconds the boat is going astern. There is no reversing gear on the engine. The power can be exerted in any direction—that is, at any angle with the keel—with an easy turn of the wheel, which two fingers can govern. There is no rudder on the boat. The steering is done by shifting the direction of the power. The Ericsson screw works in a plane vertical to and at right angles with the keel. The Fowler wheel works in a horizontal plane. The latter can adjust the breadth and depth of its blades, so as to exert the same power with half the draft. It places the blades below the ice, and at the same time further from the bottom than the screw works.

NAVIGATING OFFICERS IN THE NAVY.

THE London *Times* concludes an article on the *Agincourt* court-martial by remarking that a serious question will remain to be considered when these personal investigations have been concluded. Has not the time come for abolishing altogether the separate class of navigating officers? Our navy is the only navy in the world in which there is a separate class of officers for performing the duties of navigation. The institution of this class in our own service dates back to the time of Charles II., when the navy was not as yet a profession, and when colonels and majors were appointed as captains to fight the ships which the masters had to navigate and direct. We still, though the same reason no longer exists, maintain two separate and distinct divisions in the navy. We have "cadets" and "navigating cadets," who are entered separately at the same age, and receive the same education until the time that they go afloat. Both study navigation as the principal part of their school-work, but the "navigating cadets" are confined to the practice of navigation, and it is only due to them to say that as a rule they navigate well. But they navigate no better than the executive officers with adequate practice in navigation and pilotage would do, and we have always a superabundance of executive officers for the work. The staff-commanders hold the highest rank of the navigating officers, and we have seen from recent experience that there is no immunity against negligence with them. Every captain of a ship would be the better officer, if he had mastered the practice as well as the theory of navigation. The rising generation of executive officers are largely in favor of being allowed to navigate, as may be gathered from the evidence taken last year before the Admiralty Committee on Education. The present scheme is costly, as employing two classes when one would suffice; it is open to objection, as withholding from the captains of our ships a necessary part of a seaman's education; it is not completely satisfactory in its working, as the recent disasters show; and it was condemned to gradual extinction, after six years' consideration of the subject, by the Duke of Somerset's Board of Admiralty, and only now exists because, on a change of ministry, the determination was reversed by the conservative board which then succeeded to office.

NAVY GAZETTE.

REGULAR NAVAL SERVICE.

ORDERED.

AUGUST 23.—Chief Engineer Thomas Williamson, to the Navy-yard, Portsmouth, N. H., on the 1st of September.
AUGUST 26.—Commander Thomas H. Eastman, to equipment duty at the Navy-yard, Washington, D. C.
Sailmaker George A. Boerum, to equipment duty at the Navy-yard, Boston.
AUGUST 28.—Surgeon Frank L. Dubois, to the *Iroquois*.
SEPTEMBER 2.—Commander Wm. P. McCann, to command the *Nipsic*.
Lieutenant George A. Norris, to duty in the Signal Office, Washington, D. C.
Boatswain Wm. S. Bond, to the *Worcester*.
SEPTEMBER 4.—Passed Assistant Surgeon Edward D. Payne, to the Naval Hospital, New York.
SEPTEMBER 6.—Chief Engineer J. B. Kimball, as inspector in charge of stores in the Engineer Department at the Navy-yard, Norfolk, Va.
Chief Engineer James H. Whittaker, as inspector of coal at Philadelphia.
Second Assistant Engineer John D. Ford, to the Navy-yard, Norfolk, Va.

DETACHED.

AUGUST 21.—Surgeon John S. Kitchin, from the Naval Hospital at Mare Island, and granted sick leave.
AUGUST 23.—Chief Engineer Thomas A. Shock, from the Navy-yard, Portsmouth, N. H., and ordered to the Navy-yard, Boston.
Chief Engineer Elbridge Lawton, from the Navy-yard, Boston, and ordered to the Navy-yard, Mare Island, California.
Chief Engineer Jackson McKelwell, from the *Plymouth*, and placed on waiting orders.
AUGUST 28.—Surgeon James S. Knight, from the *Iroquois*, and ordered to the *Saranac*.
First Assistant Engineer W. S. Neal, from the Navy-yard, Boston, and granted three months' leave.
SEPTEMBER 1.—Chief Engineer B. F. Isherwood, from the Navy-yard, Mare Island, Cal., and placed on waiting orders.
SEPTEMBER 2.—Lieutenant-Commander Edwin White, from the Navy-yard, Philadelphia, and ordered to the *Kansas*.
Lieutenant-Commander O. A. Batcheller, from the Navy-yard, Boston, and ordered to the Naval Academy.
Lieutenant-Commander Wm. B. Hoff, from the *Kansas*, and placed on waiting orders.
Lieutenant-Commander Wm. B. Newman, from the receiving ship *Vermont*, and placed on waiting orders.
SEPTEMBER 4.—Surgeon Henry M. Wells, from the Naval Hospital, New York, and ordered to the *Iroquois*.
Assistant Surgeon P. P. Bielby, from the Naval Hospital, Philadelphia, and granted sick leave.
SEPTEMBER 5.—Lieutenant-Commander E. M. Shepard from the *California*, and granted sick leave.
Assistant Surgeon Wm. M. Nickerson, from the *Saranac*, and placed on waiting orders.

RESIGNED.

AUGUST 24.—Midshipman Charles Briggs.

LIST OF DEATHS

In the Navy of the United States, which have been reported to the Chief of the Bureau of Medicine and Surgery for the week ending August 26:

Hugh W. McKee, Lieutenant, June 11, U. S. steamer *Colorado*.
Seth A. Allen, landsman, June 11, U. S. steamer *Colorado*.
Dennis Hanrahan, marine, June 11, U. S. steamer *Bentley*.

FOR THE WEEK ENDING SEPTEMBER 2.

Samuel Watson, seaman, August 21, U. S. steamer *Severn*, Pensacola, Fla.

CHANGES IN THE MARINE CORPS.

THE following are the changes in the officers of the Marine Corps since last memoranda, viz.:

AUGUST 23.—Major David M. Cohen, U. S. Marine Corps (retired).—Granted leave of absence for six weeks from 1st prox., with permission to visit Canada.
AUGUST 24.—Second Lieutenant Frank Scott, U. S. Marine Corps.—Detached from Portsmouth, N. H., Barracks, and ordered to duty at the Norfolk, Va., Station.
AUGUST 25.—Lieutenant-Colonel Charles G. McCawley, U. S. Marine Corps.—Granted leave of absence for thirty days from 1st prox.
AUGUST 28.—Captain Joseph P. Baker, U. S. Marine Corps.—Released from arrest by order of the Navy Department; detached from Brooklyn, N. Y., Barracks, and ordered to duty at Marine Barracks, Washington, D. C.
SEPTEMBER 4.—Captain Charles A. Stillman.—On the 1st inst. ordered to proceed to Brooklyn, N. Y., Barracks, and report for duty at that post.

THE GREAT ICE-PLAIN OF GREENLAND.

(From the Galaxy for October.)

MOST people who have ever heard of Greenland know that ice is the chief production of the country; yet probably but few are aware of the immense extent of her resources in this respect, or of the excellent facilities she enjoys for shipping away the crop. For much interesting information on these and other points concerning that country, we are indebted to a paper from the pen of Mr. William Pengelly, F.R.S., published in the July number of the "Popular Science Review." This paper is based partly on the observations of Dr. Brown, who accompanied Mr. Whymper in the Greenland exploring expedition sent out by the Royal Society of Great Britain in 1867, and partly on the observations of earlier travellers.

Greenland, in the opinion of this writer, is a wedge-shaped island, which Dr. Brown believes to be thickly covered with ice throughout its whole interior, while the only visible land upon it is a strip of varying width along the coast, separating the interior ice region from the sea. This is the only habitable portion of the country; and for a short time in summer it is free from snow, and supports a considerable variety of vegetation. Viewed from the sea, this outskirting land presents the appearance of a circle of bare islands, which rise in some instances to a height of two thousand feet. This island-like aspect of the coast is due to the existence of a series of deep inlets or arms of the sea which divide the mountainous rim of land into areas of unequal extent. Followed landwards, these arms of the sea are found, as a rule, to terminate abruptly against great walls of ice, which vary in height from one to three thousand feet, according to the depth of the valleys which they occupy, and of which the inlets themselves appear to be only the continuations. The face of one of these ice walls, belonging to what is known as Humboldt's Glacier, has an estimated breadth of sixty miles. It is at these interior points, where the great ice stream flowing down the valley encounters the water which fills it below, that icebergs are formed. The immense mass of ice constituting the glacier slowly creeps forward into the water, sometimes to a distance of half a mile or more, when, from the buoying action of the water, its motion is stopped; and from the same cause rather than from force of gravity the projecting portion is broken off, and thus becomes an iceberg. Many of these icebergs find their way to the sea and disappear beneath the sun of more southerly latitudes; while many others ground in the inlets and there either slowly break to pieces, or, as is sometimes the case, accumulate to such a degree that they choke up and even obliterate the passage from end to end.

"Once fairly on the ice in the interior, a dreary scene meets the view—one great ice field, unbroken in all directions, except in those in which the outskirting land is seen. The traveller, however, finds it traversed with crevasses, the bottom of which he can neither see nor reach with his sounding-line. The surface of the field rises continuously but gently, the gradient diminishing toward the interior. In the winter it must be covered by a deep layer of snow, and the surface must be smooth as a glassy lake; but in summer this covering is converted into water, which, in the form of streams, finds its way to the sea directly by flowing on the surface to the edge, or indirectly by falling into crevasses, and thence by subglacial routes. As is the case with glaciers generally, the surface of the ice is ridged and furrowed; and so far as observations have gone this increases toward the interior. Nowhere is there to be seen on it a trace of any living thing, or a patch of earth, a stone, or, in short, anything whatever to remind one of the outer world.

"There seems every probability that the country is covered with one continuous almost level field of ice, concealing or obliterating all indications of hill and valley, and without a single break for upward of twelve hundred miles from north to south, and four hundred from east to west. Its thickness is unknown; but when it is remembered that every square mile contains six hundred and forty acres, that the weight of an inch of rain is upward of one hundred tons per acre, and that even exclusive of the pressure the specific gravity of ice is about eight-ninths that of water, it will be seen that this unbroken ice-field of Greenland must have an area of upward of three hundred million acres, and a weight of more than twenty-seven thousand million tons for every inch of its thickness."

The rarity of icebergs on the eastern coast, and the fact that the surface of the ice-field is entirely free from stone or other traces of land, have led to the conclusion that there is no high land in the interior, but that the ice slopes continuously from east to west; and as its surface in the known interior is considerably below the level of the bordering land, it is also inferred by Dr. Brown that the bare surface of the country, were the ice removed, would present the appearance of a huge shallow basin—a basin now filled with ice, which slowly flows off in the form of glaciers through the enormous lips [in the zone of mountain land forming its rim.

The yearly precipitation of both snow and rain is estimated at about ten inches; the discharge of ice in the form of glaciers about two inches, a small quantity by evaporation from the surface of the field, but most in the streams of water which pour out both summer and winter from beneath the glaciers. Whether increase or waste is greatest no one has yet undertaken to decide.

Dr. Brown confirms the opinion of geologists generally, that the west coast of Greenland is slowly sinking beneath the sea, and he gives much valuable evidence in support of the view; he does not however agree with other geologists in the belief that other parts of the island are now rising, but thinks that while there is unmistakable evidence that at some former period an extensive upward movement has taken place, at the present time the whole country is slowly going down together, at the rate of something like five feet in a century.

LONDON ORDNANCE WORKS, BEAR LANE, SOUTHWARK ST., LONDON, S. E., ENGLAND.

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TRANSFER TO THE MARINES.—A First Lieutenant of Infantry, well up on the roster, will, if practicable, transfer with any first lieutenant of Marines, with about the same prospects of promotion. It is believed that this can be effected by special legislation, if not otherwise. Address C. M., care ARMY AND NAVY JOURNAL.

TRANSFER.—A CAPTAIN OF A WHITE INFANTRY regiment, serving at a pleasant post in the West, desires to transfer to another regiment of Infantry or Cavalry (white). Address CAPTAIN, care of ARMY AND NAVY JOURNAL.

TRANSFER.—A FIRST LIEUTENANT OF ARTILLERY (near the foot of the list), serving at one of the most desirable posts on the Atlantic coast, would transfer with a First Lieutenant of Cavalry (white), serving on the Plains, New Mexico, Utah, or Colorado preferred. Address SUB, care ARMY AND NAVY JOURNAL.

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WANTED.—A BAND LEADER, who plays a reed instrument, to lead a band composed of reed and brass instruments. Address ADJUTANT NINETEENTH INFANTRY, Baton Rouge, La.

THE preliminary steps have been taken toward the formation of a Rifle Practice Association in New York, with the view of establishing rifle ranges similar to those in use in England at Wimbledon and other places, for the purpose of stimulating the National Guard to regular and emulative practice with the rifle. The intention is to prepare long rifle ranges in the vicinity of New York, which shall be open to the use of the National Guard of the State and whole country, and to clear the way for a national yearly competition like that which has stimulated the military enthusiasm of the English volunteers.

By telegraph from Washington we learn that the report of the Board of Visitors to the Military Academy for the year 1871 has just been printed. Only four members of the board, consisting of twelve members, signed the report unconditionally; three took exceptions to an article which recommends a stricter discipline, and one of these objected to the recommendation of the board making it a rule to retire, on a suitable salary for life, professors whose age incapacitates them for duty. Of the professors whom the report proposes to retire now are the professors of ethics and law, of engineering, and of drawing, the latter study to be abolished. Five members were absent when the report was signed. The board speak in the highest terms of the results of the examinations of cadets in their respective studies. The following suggestions are made in the report: That henceforth the office of chaplain be made distinct, the term of incumbency to be limited to four years, and the religious denominations to be represented in rotation in making appointments of chaplains; that a preparatory course of at least one year should be established, and, in view of the number of annual rejections, that the minimum age of admission to the Academy be fixed at eighteen years; that a professorship of ethics and belles-lettres be established, the incumbent to be selected from civil life; that a new telescope be purchased for the observatory, to take the place of one in use there upward of forty years; and that new buildings be erected in place of the dilapidated and almost useless workshops. The care of the premises is pronounced excellent.

SATANTA and Big Tree are to be imprisoned for life instead of being hanged, and the Kiowas, finding that there was a prospect that they would receive further punishment, and hoping for a release of their imprisoned chiefs, have brought in forty-one mules in return for those killed or driven off from Texas by Satanta and his party some time ago. They are lavish also in their promises of good intentions in the future. We hear nothing authentic from General Crook's movements in Arizona. The last report simply states that he is north of the Gila mountains, and has been unable to bring the Apaches to an engagement as yet. Aggressions in southern Utah from the Santa Clara Indians are reported, and the Mission Indians in southern California are giving trouble.

J. A. Viall, superintendent of Indian affairs for Montana, denies the story of a terrible raid on the Upper Missouri by Indians. The man Courtenay, the author of the story, and who is said to be the principal sufferer, "is," the agent reports, "what in this country is called a 'wolfier,' who has been living with the Piegan Indians for some time. He quarrelled with the Indians, they robbing him of what he had in robes and furs and horses. From what information I can get, the Indians had the best right to the property, especially the horses. This is the extent and all there is of the much-advertised Indian raids on the Upper Missouri."

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HEAVY NAVAL ORDNANCE IN EUROPE.

THE seemingly irrepressible conflict between ordnance and armor, which for the last ten years has been waged with changing fortune and doubtful ascendancy, appears now to be no nearer a final settlement than at its beginning. True, the unsatisfactory results given by the 35-ton gun in England, and the problematical efficiency of the *Devastation* class of iron-clads, appear to have established for a time a limit to the absolute power which can be utilized by either the attack or defence in naval warfare; still, development of new systems, and elaboration and perfection of old ideas, now quite as fully as ever afford the ordnance officer a constant field for study.

It will be remembered that when the French Government first put afloat the iron-clads *La Gloire* and *La Normandie*, England met the encroachment on her position as mistress of the seas by bringing out the *Warrior* and *Black Prince*, armed with heavy smooth-bore, cast-iron guns, which were believed to possess sufficient power to destroy their probable adversaries. The *Magenta* and *Solferino* followed, calling out the 100-pounder breech-loading Armstrong rifled guns of wrought iron; while our war, with its monitors and well-tried 15-inch ordnance, after long competitive experiment, developed the composite—steel and wrought-iron—Woolwich system of muzzle-loading rifled guns, ranging from seven to twenty-five tons in weight, and varying in calibre from seven to twelve inches.

Thus, England was forced to adopt built-up rifled guns for her armament in order to preserve the power and prestige of her fleet, first by the action of France, and subsequently by the sudden increase of our naval strength. All Europe has coincided in the conclusion that guns of this type—built-up rifles—are alone equal to the requirements of modern ordnance; yet this concurrence in a general principle by no means ends the contest or begets harmony of details, the questions of material, character of rifling, and system of loading being still subjects of warm controversy.

England has adopted muzzle-loaders using studded projectiles, and having as an inside structure an oil-tempered, crucible steel tube, whose walls, two-ninths of a calibre in thickness, are surrounded by one or more jackets of coiled wrought iron. France relies upon a breech-loader also firing a studded projectile, the tube of the gun (walls one calibre thick) being of cast iron, with encircling hoops of puddled steel; while Russia and Germany adopt the Krupp gun—a breech-loader employing a lead-coated projectile, the sides of the inner tube of the piece, of tempered crucible steel, being eight-tenths of a calibre thick, and surrounded by one or more sets of rings of the same metal.

The remaining naval powers of Europe have accepted one or the other of these rival systems. As will be observed, steel plays an important part in the construction of them all, and is recognized as the material possessing in the highest degree the quality of resisting the violent concussion brought to bear upon the gun when discharged, and presenting not only the most continuous resistance to pressure, but also to the corrosive action of the gases developed.

The question of gun structure is simply one as

to the fitness of certain materials to resist dynamic strain, and the most suitable for this work is that which offers the greatest resistance through the greatest space. That low steel, with an average elastic limit of over 60,000 lbs., whether prepared by oil tempering, as in Russia and England, or by annealing, as in Germany, possesses the happy combination of what is desired—viz., great elasticity, united with sufficient hardness to prevent erosion—can scarcely be questioned by those familiar with the records of European practice-grounds, not one of the built-up pieces of homogeneous steel having failed, although some have withstood 1,400 fires with battering charges. Now that the mechanical problem of producing sound homogeneous masses of steel, of even greater magnitude than is likely ever to be required for ordnance purposes, has been practically solved by KRUPP and others, the only powerful objection heretofore urged against this material as a gun metal seems to have been met.

This country does not possess any establishments capable, like that of KRUPP, of turning out steel work of any size and in any quantity. Our crucible steel works are still extremely limited both in number and capacity, and were we to begin now the construction of such works, it would be long before we could get them in operation. There is no branch of metallurgy which is so absolutely dependent upon the skill of the workman as steel-making, and it would be long before our manufacturers could train or import any considerable number of men for the work, and still longer before they could free themselves from the absolute bondage which a small and necessary class of men always imposes upon its employers. Nor could manufacturers be easily found who would undertake the task of setting up works here, for the crucible method of making steel is looked upon as one of those processes destined to be supplanted by the progress of metallurgy. There are already works in Sweden where razor steel is made by the Bessemer method, the decarburization of the charge being arrested at the proper point, and no *spiegel* used. For all these reasons it appears evident that if we adopt steel guns in our service, we must for a long time at least draw either the material or the finished guns from foreign manufacturers.

WHETHER it is true as a general principle that the evil which we do lives after us, while the good on the contrary is "oft interred with our bones," we do not pretend to decide; but such certainly seems to be the case with the French war. All the confusion of that dark time is repeated to-day in the Assembly and in the army, while the French seem unable to perceive the sharp reproof of folly which other nations so easily read for them, as the lesson of that disaster. We see them uncovering their hoards of money to take the government loan, and responding to the necessity for action, in a way that would arouse warm admiration were it not for a lingering suspicion that it is done less for love of country than for hatred of the Prussians; less for the sake of making France once more noble and worthy of the leading position she claims in civilization than for the sake of making her once more strong enough to put a new termination to a new war with Germany. Her Assembly would be utterly chaotic were it not for the restraint put upon all parties by the desire to shorten the German occupation of the Paris forts. What influence the ministry will wield when that means of coercion fails, no one can say. It may be that the marching away of the Germans will be anything but the blessing which the French now expect to find it.

But it is in the army that confusion at present reigns supreme. We pointed out during the late war how embarrassing the French divisional system had proved in the work of assembling the troops upon the frontier. That confusion has been increased by the reckless way Minister GAMBETTA had of ordering the formation of new regiments. All the old army being in the hands of the Germans, there was perhaps nothing else to be done; but certain it is that instead of the 115 infantry and 60 cavalry regiments which, with some battalions, formed the French army before the war, there are now 219 infantry and 114 cavalry regiments, and 54 battalions of *chasseurs à pied*. As a consequence, there are some thousands of surplus officers who must be dis-

carded in some way; and a Frenchman is not the man to let honorable employment go without a struggle. France is the present theatre of the struggle, of which we in America know something, between military and civilian appointees. The old army returning from captivity in Germany found a new force, officered by men caught up almost at hazard; and now the struggle is to see which shall keep the commissions. At first sight it would appear that the military men have altogether the better side of the question, for the war did not continue long enough to give the new appointees sufficient experience of military life to enable them to claim rivalry with their educated seniors. But besides the very ugly fact that the education of the old army officers did not save them from most discreditable displays of ignorance and a constant succession of disasters, there are some facts in regard to promotions during the war which very much weaken the case of the regular officers. BAZAINE occupied his last hours of power in Metz by distributing promotions to all about him; and probably his was no extraordinary conduct. But, on the other hand, it is hopeless for the civilian officers to try to produce anything in the old army which shall match the condition of things under GAMBETTA.

A VOLUME embodying the statutory provisions relating to the Army in all its various departments, with notes, made up for the most part of judicial and official decisions explanatory of the text, and enabling the reader at a glance to tell just what is what (a very hard thing indeed for an Army man often to find out), is now in course of advanced preparation for the press by Brevet Lieutenant-Colonel ROBERT N. SCOTT, captain Third Artillery, aide-de-camp to Major-General HALLECK, and acting adjutant-general of the Military Division of the South. Few men in the Army, if any, are better qualified than Colonel SCOTT for the task of editing such a work. A staff officer—though nominally of the line—of the highest merit, and of long and thorough experience as such, he is conversant with professional needs, and is in every way capable of supplying those of them that are within the purview of the pen. We know him well as an old staff comrade, and have had occasion to follow his tracks as chief of staff, finding them singularly well covered up from adverse criticism. Indeed, the earlier records on file at the headquarters where he has served, and notably at the headquarters of the Division of the Pacific, abound with evidences of his ability. These last, extending over several years of busy staff work, embrace very many letters and marginalia, which, if published, would serve as models of style, and infuse into the literature of the Army something of their own terseness and perspicuity.

The object of this notice, however, is not to describe either Colonel SCOTT or his work, but simply to advise his professional brethren of the fact first above stated, and to assure them, of our own knowledge, that a desideratum is about to be supplied to them; namely, a book that will inform every one of just what it behooves him to know of the service, in a statutory point of view, and outside of "Regulations," giving him in a nutshell the law and the gospel of his case, whatever that case may be.

A FEW months ago the new Governor of Utah paid a visit, as it was quite becoming for him to do, to the penitentiary situated near Salt Lake City. Arrived at the "institution," he was welcomed by a convict, who informed him that the keeper had gone off trout-fishing with another convict; still another inmate had resumed the practice of mining, which his trial a few weeks before and condemnation to fifteen years' imprisonment had interrupted. Another had gone off, but they could not tell where he was. In short, the Governor found two convicts left, one in charge of the building, and the other enjoying himself as a guest. The use of locks was ignored throughout the building, it being thought much cheaper to brace a log of wood against the door of a cell whenever the form of restraint was gone through with. The penitentiary was under Mormon rule, but the convicts had been tried and condemned in the United States courts, chiefly for murder and horse-stealing. The industrious miner above mentioned, having been sentenced for murder, had through charity procured a commutation of his

punishment to a long imprisonment; having taken French leave, he was at the very time of the Governor's visit varying the labor of prospecting with the diversion of hunting for a man he proposed to kill.

Governor WOODS is reported to have been somewhat moved with indignation upon discovering the condition of affairs, and we have now a report from Utah of disorders which we suppose to have grown out of the above narrated circumstances. A law was passed last winter taking the penitentiary out of the hands of the Mormons, but no action was taken on it until lately, when a United States marshal went to take charge of the building. That he found, but the furniture and the sole remaining prisoner, who was confined on the charge of manslaughter, had been removed by the Mormons to the city lock-up. They refused to deliver up the prisoner, and assembled some two hundred strong, it is said, to defy the marshal, who then procured the aid of a posse and arrested the Mormon marshal and warden. The much-coveted manslaughterer, apparently the last of the noble band of convicts, took advantage of the confusion to rejoin his former companions in their present state of freedom.

This may seem to be a small matter, and it is to us. But to the Mormons, who are ignorant enough to imagine that with their small numbers they are to gain some mysterious victory over the people of the United States, it is no insignificant occurrence. Their leaders may persuade them that it is one more instance of the "mob's" oppression, and by thus teaching them that they are martyrs may be able to keep alive a little longer the spirit of abject submission which has been so strong, but is now so much weakened. But however the Mormon people may be temporarily persuaded of the divine mission of their rulers, it is certain that occurrences of this kind must undermine their faith in those pretensions to power and independence of—nay, superiority to—the Government of the United States, which, with obscene instructions on the subject of polygamy and fervid evangelical preaching, make up the odd and not very well-flavored compound known as the sermons in the Tabernacle.

ACCORDING to the *London Times*, when the British Government desired to recognize its appreciation of Mr. PEABODY's philanthropic spirit, there was apprehension that Congress would refuse its consent, as it had refused when the same Government proposed to confer an order upon Lieutenant PEARSON. Whether this apprehension was felt by the British Government the *Times* does not say, but we hardly think Mr. PEABODY should have blundered in a matter so simple and known to the school children of the country. It is only the officials of Government and the officers of the Army and Navy who in America are debarred from receiving any attentions foreign governments may choose to offer them. Citizens not in the employ of the Government pay no deference to the Government in such cases. Professor MORSE, who has a breast full of decorations, has never asked nor needed an act of Congress to enable him to receive them.

FROM General Court-martial Orders No. 15, which we publish elsewhere, it will be seen that Second Lieutenant CHARLES L. SNOW, late of the Eleventh Infantry, is of the opinion that the violation of the seventh commandment is not "conduct unbecoming an officer and a gentleman." The court before which he was tried on this charge, and the Secretary of War, find it necessary therefore to teach him a lesson in morality, and he accordingly ceased to be an officer of the Army on the 29th of August. Laying aside the moral question involved, the verdict of the court was a just one. Whatever opinion he may hold as to the license that should be allowed to his evil passions, no officer can venture to assume that he can abuse the confidence of friendship or take advantage of the opportunities of garrison life to bring misery into the families of his associates, and still assume to be a gentleman or entitled to wear the uniform of an honorable service.

IN matters of army improvement the French are taking the most decisive steps. The army committee of the Assembly has decided upon universal service between the ages of twenty and forty. Every Frenchman must pass four years in the active army;

then, passing into the reserve, he is allowed to marry. As in Prussia, the first reserve is held to be part of the active army, on leave of absence, as we might say, and it can be called out by a simple decree of Government. The last two reserves can be called out only by special law. France, then, has at length succumbed to the needs of her situation, and will reform herself upon the strictly military basis.

ENGLISH papers are full of the approaching military manœuvres which are to take place in Hampshire. Three divisions will be on the ground, but the condition of the transport is such that one must be comparatively inactive. The new Control Department, after meeting with an amount of derisive criticism which few services have to encounter, has proved itself not unworthy of the lack of confidence which the public, both professional and unmilitary, have unreservedly given it since the first hour of its birth. The new experience of the British army will be watched with an interest and hope whose intensity is to be measured not by the mere desire to improve and strengthen the service, but by the pressure of that apprehension which Englishmen undoubtedly feel in presence of the tremendous military organizations surrounding them. Colonel E. W. BRAY, who has been lecturing on the conduct of sham campaigns, recently explained what he considered to be the best method, and which we suppose foreshadows more or less the plan decided upon.

Broad Arrow says:

"Colonel Bray is of opinion, with regard to the plans of manœuvring now adopted at Aldershot, that one of the principles that should be relied upon ought to be based on Field Marshal Von Benedek's 'General Instruction' to the officers of the Austrian army in 1866, allowing them the free exercise of their judgment and discretion in interpreting orders in cases of urgency or emergency. In order to perform large manœuvres successfully, there must be full information afforded of the objects and intentions of the contending forces. The 'general idea,' as he would term it, must come from headquarters, and be communicated in the form of a printed or lithographed memorandum card, together with another card, giving the 'special idea' for each of the opposing armies, which settled their position and the object of their movements, leaving entirely to the two opposing generals the tactical movements of their troops. Then came the introduction of the plan of an 'umpire staff,' derived from the Prussian army. With the umpire staff lay the decision as to where the advantage arose at a particular point of the sham battle, what troops were to retire, and so on. The following are the leading rules by which the umpires at Aldershot work: The umpire-in-chief will be the lieutenant-general commanding. The umpire staff will be under the orders of the lieutenant-general. The staff will consist of four, five, or six selected officers. Additional officers will be employed under the umpires as assistants, and in order that they may learn their business. All orders from the umpire staff are to be considered as directly emanating from the lieutenant-general in command, and are to be carried out with alacrity. The umpire staff will be distinguished by a broad white silk band round the right arm. Each umpire is to be accompanied by one mounted orderly. No general or other officer commanding a brigade, regiment, or battery is on any account to enter into a discussion with the umpires. The umpires may halt any body of troops and order them to retire behind the first line, or to any position indicated. The umpire staff has now been at work at Aldershot five weeks, and in that short time, like the wand of a magician, it has suddenly turned the time-honored battles of Cooked-Hat Wood and Kilmore Hill into practical and instructive realities."

ACCORDING to the Washington despatches, the Mexican custom-house authorities have been amusing themselves with seizing or frightening away United States vessels. Three cases are reported, one several months old and already in the hands of the diplomats; the others occurred last month off the bar of Santa Anna. These annoyances are probably due to the private whims of the Mexican revenue gentlemen; but combined with the frequent interruption of Mexican Indians over the Texas border to steal on American soil, these small troubles may be considered reason enough for energetic remonstrance with the Mexican Government.

WE publish this week in a supplement General MORGAN's pamphlet, "A Few Thoughts on the Artillery," for which we are constantly receiving inquiries. Added to this is a letter from the author answering some of the criticisms to which his views have been subjected. We also take this opportunity to publish a full description, illustrated with cuts, of the Krupp gun, the great example of an all-steel weapon, and very widely in use abroad. It is on the line of these weapons that the recent improvements in Prussian artillery practice have mainly taken place, and this, coupled with their recent trial under the exigencies of active service, make their study peculiarly interesting at this time.

Broad Arrow tells us that "Mr. E. J. REED, C.B., has gone on a short 'professional' tour to Germany. It is perhaps a fortuitous circumstance that Commodore RODGERS, of the United States Navy, has also gone in the same direction, via Belgium."

If our contemporary thinks the above fortuitous circumstance points toward any danger of England's losing her great constructor, we can give every assurance that such is not the case. We think our own country can supply all the naval talent our Congress will pay for for a long time to come.

CORRESPONDENCE.

FROM THE AUTHOR OF "THOUGHTS ON ARTILLERY."

To the Editor of the Army and Navy Journal.

SIR: The author of the little pamphlet on artillery, which has been frequently referred to in your columns of late, had for his sole object in writing and distributing it the bringing about of some healthy discussion among his brother officers. He hoped—he can hardly say expected—that the subject might be taken up by abler pens, and something effected toward educating artillery officers to a proper sense of what their arm of the service is and what it ought to be.

There can be little question that the great obstacle in the way of reform is the marked indifference concerning it shown by our own officers. Were they united in giving expression to the belief that reform is urgently demanded, and in indicating, at least so far as general principles are concerned, the changes required, some at least of the existing evils would soon be remedied.

This indifference arises from various causes—sometimes from age, sometimes from incompetency, oftener from a conviction that it is hopeless to struggle against all the influences adverse to progress, and oftener still, perhaps, from a lack of any conviction whatever on the subject. Numbers of officers appear to think our condition a normal and proper one, and accept with a simple and unquestioning faith the doctrine that the duties of the American artillery are purely mechanical, such as may be taught to an indifferent non-commissioned officer, while everything involving any considerable exercise of the intelligence has been relegated to the ordnance. Could a more ingenious method of keeping an officer in professional ignorance be devised than to educate him to the belief that it is not necessary for him to know anything? The fact is that the term professional ignorance has no meaning when applied to an artillery officer, if he is able to drill a detachment and perform after one fashion or another his daily routine of guard or other garrison duty.

It is the conviction that these views are shared by the most intelligent officers of artillery which has given the writer confidence in expressing them. It is greatly to be desired that some plan by which the intelligent opinion of the artillery can be made known should be adopted. Individual expressions of opinion find but a limited audience, on account of the isolation of artillery posts; and an officer who desires to extend his influence beyond the little circle in which he daily moves, must overcome the repugnance so generally felt to appearing in print, and be prepared to meet an endless variety of criticisms. The writer has not been disappointed that as yet no broad and catholic response to the arguments presented has been made by any officer of the Ordnance Corps. It was foreseen that to draw them from their vantage ground of silence was not one of the probable results of the pamphlet. An ordnance officer who takes sufficient interest in the matter to give it any thought at all must smile with satisfaction when he reflects upon the apparently impregnable position of his corps, and sees at rare intervals the feeble attempts of stragglers from the artillery, without a leader, and each with a different weapon, to force some acknowledgment of their claims. Not until these stragglers assume somewhat of the appearance of the disciplined and compact body which bars their path, will any other defence be offered than a complacent smile, throwing out of the account an occasional wild shot by some irrepressible skirmisher or raw recruit.

It was no part of the writer's plan to provoke any discussion upon the merits or demerits of the Ordnance Corps. He sought to place the controversy upon grounds where it might be waged without any aspersion of men or motives, or acerbity of feeling. His argument might be condensed and stated syllogistically somewhat as follows:

1. The condition of the artillery is far from creditable to the service, and as a professional body compares very unfavorably with that of other first-class powers.

This is a question of fact which may be readily determined by the testimony of the officers who give character and reputation to the arm. If it is not generally admitted, the writer would be pleased to hear of any officer of ability who is satisfied with the situation.

2. The stagnation which characterizes the artillery is due primarily to the fact that there is no incentive to nor opportunity for an artillery officer to pass beyond the mere rudiments of his profession, except such as may come from an individual desire for knowledge. At the point where professional knowledge may be said to begin, the artillery is hemmed in and shut off by the scientific artillery corps, known as the ordnance. A volume might be written to illustrate the point that in our service a broad line has been drawn by legislation and custom, on one side of which are grouped the men who use their heads, and on the other the men who use their hands. That this state of affairs is ruinous to the artillery is as clear as the noonday sun. It has never been seriously maintained that it inures to the benefit of the artillery, or that under it we can have any useful development. It has been upheld by the argument that under it the Ordnance Corps found its highest efficiency, a statement so often made that it is accepted without question by a large part of the Army. This is the argument repeated by your courteous correspondent J. J. O'R., who, though he is a member of neither corps, might well be an ordnance officer. To substantiate this argument, it must be shown that the Ordnance Bureau in our service has arrived at a higher state of efficiency than has characterized the artillery wherever the ordnance has not been a separate corps. This cannot be successfully shown, and all assumptions of the fact can impose upon no one who has made the matter a study.

The writer sought, in the pamphlet referred to, to give some reasons why the separation was injurious to the ordnance, the principal being that artillery is eminently a practical science, and that under the present organization it results that there is a very considerable debatable

ground scarcely occupied by either corps. Illustrations were given to show how several deductions of theory, such as dispensing with the elevating screw, the construction of certain gun carriages, etc., failed to stand a practical test. Artillery officers appreciate as fully as any one the merits of officers like General Rodman, but they do not believe that these owe their greatness to their accidental connection with the Ordnance Department, or that if the ordnance had been a bureau of the artillery, as in the Prussian service, for instance, such men would have failed to rise above the common level. Does J. J. O'R. seriously contend that General Rodman's light would have been hidden under a bushel had there been a more intimate relation between the artillery and ordnance? What chance has an artillery officer to add anything of more value than a handbook to his profession, or acquire any reputation other than that of a good drill-master? J. J. O'R. is able to point to tables of ranges as the sum total of our professional performances—and a more beggarly exhibit could not be made. They publish to the world the slipshod and inaccurate manner in which our firing is done, and are worse than worthless, serving only to lead one astray. If one had never examined them critically, their uselessness could be predicted, knowing the circumstances under which they were made, as has been described heretofore. Turn to the ranges for the 12-pounder as given in the Light Artillery Tactics and the Ordnance Manual. It is generally understood that the increments of ranges decrease as the elevation is increased. By this table, when the elevation is increased from 1 deg. to 2 deg., the range is increased 255 yards; from 2 deg. to 3 deg., 325 yards; from 3 deg. to 4 deg., 120 yards; and from 4 deg. to 5 deg., 360 yards. No theory known to "line artilleryists" will account for such eccentricities. How much success would an artillery officer have, does J. J. O'R. think, in attempting to procure from the Ordnance Department the instruments for constructing accurate tables of ranges? His application would probably be finally returned to him with an endorsement to the effect that his post was not a "school of practice." J. J. O'R. says the inventive faculty of artillery officers is as free to develop itself as that of civilians. Ay, there's the rub! He does not say (and cannot if he is as familiar with the interior of the Ordnance Corps as his letter would indicate) as free as an ordnance officer. "As free as a citizen" tells the whole story. If one-half the effort that is made to encourage and develop talent among ordnance officers was spent in removing the obstructions in the way of the artillery, the service would be no worse off. An artillery officer may propose a useful idea derived from his practical experience, but if it ever appears embodied in service, it is as an ordnance invention.

It is time that this argument that the efficiency of the Ordnance Corps depends upon its separation from the artillery was thoroughly ventilated, for it is the entire stock in trade of the opponents of all forms of consolidation. The hostility is not against any one form, but against every proposition looking toward an elevation of the artillery, if by direct or remote inference the importance of the Ordnance Corps will be lessened. J. J. O'R. could give no greater proof of not belonging to the Ordnance Corps than by coinciding in the proposition for a Chief of Artillery. This at least is the writer's impression, and he would be glad to find that he is mistaken.

The manner in which the argument that the Ordnance Corps will be injured by any closer affiliation with the artillery is generally put, is offensive in so far as it implies that any contact whatever with the latter is hurtful to the former. Imbued with this notion, J. J. O'R. speaks about the ordnance being weakened by venesection and transfusion for the benefit of the artillery. It may well be doubted if either of these operations, judiciously conducted, would result in the slightest injury to either corps. For the want of some such operation one corps has long been almost past surgery, and the other has barely escaped a rudier remedy than the most belligerent artilleryist would suggest.

Has the Ordnance Corps been injured by the transfers made to it from time to time of artillery officers, including its present head? The argument seems to assume that when consolidation is effected there will be an end to assigning officers to the duty for which they show peculiar aptness, and that under such a system Rodman would have been taken from his proper sphere and ordered to duty with troops. To our mind, the effect of consolidation would be just the reverse. The chief of the consolidated corps would have a larger field from which to select his officers for special duties, and an opportunity of giving to ordnance officers the practical knowledge only to be gained by service with the artillery.

To the other correspondents who have favored me with their comments, no detailed reply seems called for. One who writes under the caption of "A Few More Thoughts" thinks he has pushed the argument for consolidation to its legitimate conclusion, by merging the offices of hospital steward and veterinary surgeon. Reverse the application of this logic, and it would seem to lead to the separation of the Medical Corps into two branches, the members of one to study medicine and put up prescriptions, the other to administer them according to the labels. Into this style of controversy, however, the writer has determined not to be drawn, because it seems to him to belittle the subject.

The criticism of X., that the writer failed to state the truth broadly enough, is correct, and it may be said that he strove to merit this criticism rather than that he had exaggerated his case. X. has turned his attention to a subject which the writer has purposely avoided as before stated, not conceiving that his main purpose would be assisted by such a divergence.

Your editorial reply to X. is not conclusive, and will doubtless receive attention at his hands.

You declare in your issue of August 11 that the position of the JOURNAL will be determined by the precise form in which the question of consolidation is presented. It is very uncertain when any proposition of this nature, presented in the shape which you appear to

anticipate, will be laid before you. Judging of the future by the past, nearly or quite all those engaged in the present controversy may have ceased to take any interest in worldly affairs before the artillery is prepared to make a united and earnest effort to secure its proper professional position in the army. Officers now gray in service show the scars and trophies of similar conflicts twenty years ago. It may be that the seed sown then and since will bear fruit sooner than is expected, but it is probable that the JOURNAL will have many opportunities to assist in bringing about a healthier tone in the artillery before it will be called upon to consider any well-digested plan for consolidation. The writer does not flatter himself that what he has written can have any such immediate effect as to induce action upon matters which can hardly yet be said to be subjects of discussion. Indeed, any action in advance of a healthy public opinion would be premature. Certain minor points appear to be pretty well established now. It is conceded by a large majority, apparently, that we want a chief of artillery to organize our system of instruction, to put us in the way of knowing what is being effected abroad in our profession, to show us wherein we are chiefly deficient, and to establish a professional standard beyond the tactics. The rest will come in due season. As it is now, we are without any tactics for our heavy artillery, the old one being practically obsolete; we have none of the instruments required for accurate target practice; we cannot obtain the plans and drawings of our guns and carriages; for lack of a head of some kind, nothing, not even the composition of a battery, is fixed, a multitude of people each in turn prescribing for us; we have no professional literature of our own, nor any access to that of other nations, except the meagre extracts found in the papers; we have gathered none of the fruits of late European wars, or, for that matter, our own; in short, we have long since ceased growing, having attained our stunted professional stature with the receipt of our commissions and the incomplete mastery of our handbooks.

To fortify the position that consolidation would lessen the efficiency of the Ordnance Department, two arguments are presented. The first, and, in the expressed opinion of some of the most influential officers of that corps, the conclusive one, is that which they draw from experience. It is claimed that the efficiency of the department dates from its separation from the artillery, and that prior to the separation no progress or improvement worthy of mention was made in the science of artillery. The artillery was the millstone tied to the neck of the ordnance, and the latter began its flight to the dizzy height it now occupies as soon as the ties which bound it to the dead weight of artillery were severed, as an inflated balloon soars heavenward when its fastenings to dull earth are cut.

A full discussion of this point would open up a minute history of the two corps for many years, and involve a repetition of the investigation into the claims of the ordnance, such as has been made more than once before. For the benefit of officers who are not familiar with the facts, it may be useful to re-present them at another time. At present, however, adhering to his original plan, the writer contents himself with repeating the argument presented in the pamphlet, that unless it can be shown that the science of artillery as a whole is further advanced in our service than in any other, no sound argument can be based on our exceptional organization. On the contrary if it should appear that the Ordnance Department is in no respect superior to the corresponding bureau in the artillery service of other countries, Prussia for example, while all the rest of the artillery is in comparative ignorance, no possible ingenuity in explaining the rise and growth of the Ordnance Corps can evade the logical deduction that its assumed pre-eminence is not due to the separation.

Of course, in comparing the Ordnance Corps with the corresponding bureau of artillery elsewhere, we have a right to insist that the corps shall have credit only for its own inventions, or those it has fostered and developed, and not for the inventive genius of persons other than ordnance officers, whose names are much more familiar to the Army than those of ordnance officers, with a few marked exceptions like Rodman and Benton.

The second argument, repeated with a considerable variety of dress but without change in substance, is the admitted value of subdivision of labor, and the application of individuals to specialties. The writer has already remarked upon this in referring to the letter of "J. J. O'R.," but will give it further attention when it is shown how either principle would be affected by consolidation. So far as the first (subdivision of labor) is concerned, we fail to see that any change could be made in principle. The second is also without force, unless accompanied by the gratuitous assumption that with consolidation there would be an end to the "application of individuals to specialties." Is it possible that no stronger arguments can be offered against consolidation than weak prophecies of evil to come, founded upon loose and unreasonable conjectures as to what a re-organized artillery might do? Is it the case in other services, where the Ordnance Corps is only a bureau of the artillery, that an officer who has developed a special aptitude for some branch of his profession is debarred from applying himself to his specialty? Is not Baron von Leuk, of the Austrian artillery, known the world over in connection with gun-cotton? Blakely, Boxer, Noble, and Majendie, of the British service, with their several specialties? It is idle to attempt to disprove the inference on which this argument hangs until it is shown that our exceptional organization has placed us in the van of all other nations. Indeed, it seems to us that no officer of great value to the Ordnance Department can have any fear that consolidation would result in driving officers from those duties for which they are best fitted to other and uncongenial labors. It is a fear born of a strong sense of unworthiness, such as seized a number of officers of the Army when the bill for the reduction of the Army was passed. The Surgeon-General does not

send an officer of his corps whose specialty is the use of the microscope to Alaska with recruits, and give his instrument to some bungler. The Chief Engineer does not take an officer who is making the subject of gun-carriages and the resistance of armor a specialty from his congenial labors, and put in his place an officer whose specialty is some duty connected with the Coast Survey. No intelligent person in authority follows any other rule than to assign his subordinates, so far as practicable, to those duties for which they appear best fitted.

C. H. M.

ARMY LIEUTENANTS.

To the Editor of the Army and Navy Journal.

SIR: I hasten to endorse "A Lieutenant's" communication in your paper of August 26; and if the board desire, I am sure that almost all the lieutenants in the Army would be only too glad to do the same, if the board could thereby help toward obtaining promotion for all lieutenants by seniority throughout their respective corps. The justice of this method is self-evident. For example: Several first lieutenants dating from 1863-'64 are second, third, fourth, and fifth in their regiments, while officers who joined in 1865-'66 have in other regiments been promoted captains above them. The cases are numerous, and always have been a great cause of discontent and a desire to change into some other regiment where their chances for promotion are more rapid. In some regiments lieutenants of a very recent date head the lists, while brilliant prospects for still further promotion lie before them. Other regiments show exactly the reverse. This change has often been expected and talked of, but never acted on. It is one of the most needed reforms, and one which will carry an immense amount of justice to the much abused

ARMY LIEUTENANTS.

MILITARY JUSTICE.

To the Editor of the Army and Navy Journal.

SIR: I have just seen in your issue of the 10th of August an article touching the imperfection of our military code.

It has been a matter of surprise to me that the administration of military justice (which is frequently a good deal less than justice), instead of being governed by written law, should have been left to the caprice of many variously-constituted minds for so long a time. And your reference to the difficulties in the way of dealing properly with offenders is the first that I have ever seen publicly expressed. Of course punishment for infractions of the military code should be as definitely dealt with as is the case in civil law; for it is only in this way that justice can be done. Our Articles of War are singularly defective in leaving the mode of punishment discretionary for nearly all offences embraced in their jurisdiction. In but twenty-one of these articles is the penalty specific; and in nearly every instance the court may exercise its discretion (so called), and, if it choose, outrage common sense by attaching a very light sentence to a heinous crime. I have known a court to sentence two deserters, the incidents of whose offences were identical—one to three months' hard labor and dishonorable discharge, the other to two years' hard labor and dishonorable discharge. Their trials occurred within sixty days of each other, in the autumn of 1867, the only difference being the addition of one member to the detail. But the same reviewing authority passed upon each case without comment.

This may be an extreme instance; but it is undoubtedly the fact that punishments in the Army are very unequally allotted, and depend mainly upon the peculiar ideas (or lack of such) possessed by those who happen to be members of courts. With a code framed so as to prescribe a punishment in terms for each offence, the labor of courts would be lessened, and the reputation of their members for good sense would be a good deal better than is the case at present.

Besides this, our Articles of War do not cover all the offences which are likely to be committed, unless the 99th is resorted to. Should not all crimes against the military, when committed by the military, be tried by the military? If one soldier kill another, what should be the objection to trying him before a court-martial? In the summer of 1870 two murders were committed by two different men, at different times, and at different posts (but in the same State) in my regiment. The offenders were delivered to the local civil authority for trial, and in each case the result was acquittal. When the men came back they were tried by the military under the 99th article, and convicted. The same evidence would have convicted them of murder if the court-martial could have taken cognizance of such an offence. Would it not be well to incorporate the act, or as much of it as may be necessary, passed during the war and covering murder, arson, etc., with the military code, with the proviso that it shall confer jurisdiction only as to offences committed against the military; and that in cases where such offences may be committed against civilians, the perpetrators shall be delivered to the civil authority for trial? If one soldier steal another's clothing, he cannot be tried for theft or larceny, but must come under the 99th article and suffer according to the ideas of those who try him; while he who misuses a few roll-calls—the result of a "pay-day spree"—upon being tried a few weeks after (but by another trio), is as likely to feel the hand of "justice" still more heavily. So, if a man feign sickness in order to escape duty, those who try him must cast about in their own minds to find out how to punish him. If one should insult or assault a sentinel on post, what is to be done with him? Ball and chain for ten years, or five dollars fine?

Besides being much more convenient for officers (who never offend), it will be so much more just to the men (who, from some cause, appear to be all dashed rascals) that they should know definitely what punishments are allied to conviction. Many of our soldiers never hear the Articles of War read at all; if they do, very few understand what they mean, either from ignorance of the language or inability to comprehend the reader, who is usually in a hurry. And of the small number who

have a chance to read for themselves, how many can make up their minds as to the true significance of the words, "such other punishment as a court-martial may direct"? Would it not be a good thing for the Government and the soldier if it were made the duty of every commanding officer to see that copies of the Articles of War, plainly printed in English and German on one sheet, were kept posted in the men's quarters, and that any wanton defacement thereof should have a specific penalty? This might be expressed in a new article of war. But unless the code be altered as you suggest, it would hardly pay to do this, for it would but mystify the men, and there's mystery enough about a soldier's "belongings" already.

LITTLE ROCK, ARK., August 24, 1871.

COOKING FOR COMPANY MESSES.

To the Editor of the Army and Navy Journal.

SIR: Please permit me to suggest for the consideration of the board now in session in New York city, the establishment of a system regulating the cooking for company messes. A little careful legislation on this subject would add much to the contentment of soldiers with their condition. There is too much left to the discretion of the company commander and his first sergeant in the matter of feeding the men, especially at frontier posts, where rations can be sold to teamsters, travellers, or miners at large profits, and where the whole ration well cooked is required for issue to the men on account of the scarcity of vegetables, as well as on account of the extra fatigue work required to be done.

As in most companies every private has to take his turn at cooking, it must be supposed either that all soldiers are as a matter of course professional cooks, or that the infliction of bad cooking upon the men is of no consequence, or else that the quality of the victuals dealt out to soldiers is so wretched that no manner of cooking the same could possibly improve or injure it.

Could not company laundresses in their proper turn, and for a remuneration to be paid from the company or post fund, be charged with the duty of cooking for soldiers?

F. G.

STRAW HATS AND WHITE PANTALOONS.

To the Editor of the Army and Navy Journal.

SIR: At last a renovation in the prescribed uniform impends and is in part already announced in Circular No. 10, dated headquarters Department of Texas, San Antonio, Texas, July 7, 1871, directing "that the men be allowed to wear straw hats, and that both officers and men be allowed to wear white pantaloons during the summer in the Department of Texas, authorized by the Secretary of War." I think it proper, as an old subscriber of your valuable paper, to call attention through your publication to the fact that no such article as white pantaloons can be had on the western frontier posts, except by paying enormous prices to the camp followers, better called hyenas on the small pay of an enlisted man.

To suppress these usurers, I beg leave to suggest that the chief of the Clothing Division should negotiate with the contractors of the United States Marine Corps to deliver the same article as that corps wears to the chief quartermaster of the Department of Texas for supply at a fixed price.

FORT CONCHO, TEXAS, July 20, 1871.

Another correspondent at Fort Morgan, Mobile, Ala., says:

I desire to make a proposition in regard to soldiers' clothing. There are two very serious defects in our present uniform: 1st. It is of such inferior quality that it will hardly pay for altering, and when it is altered it does not look well. 2d. It is not adapted to the climate. Soldiers serving in the extreme southern portion of the United States should have clothing of a much lighter material. Here, where the thermometer ranges for six or seven months out of the year between 85 and 105 degrees in the shade, the soldier has to undergo great suffering which could be avoided had we suitable clothing.

I would propose that a soldier be allowed to draw two pairs blue linen pants in lieu of one pair of trousers, one linen shirt instead of woollen, straw hat in lieu of the present. Do away with the present heavy uniform coat and heavy trousers during the extremely hot weather, and the result will be that soldiers in the South will improve in health and be of more service to the Government.

AN OLD SUBSCRIBER.

ACTING ASSISTANT SURGEONS, U. S. ARMY.

To the Editor of the Army and Navy Journal.

SIR: Will you be so kind as to call the attention of the "Board to Revise the Army Regulations" to the case of the acting assistant surgeons of the U. S. Army? They have the same duties to perform and the same responsibilities and dangers to meet as the regular surgeons and assistant surgeons, but they have neither the rank, pay, nor emoluments, and often they are sent to the most out-of-the-way, dangerous, and expensive stations, posts, and places; and necessarily their duties, responsibilities, expenses, and dangers are greater. Why should not acting assistant surgeons who have served in the Army five years have the same pay as surgeons, and those who have served less than five years the same pay as assistant surgeons?

JUSTICE.

THE Philadelphia Press says: Colonel Lewis Merrill, commandant at the post of Yorkville, S. C., is one of the most efficient United States officers stationed in the South. He has done more for the suppression of the disorders in South Carolina than any other officer there, and is more generally esteemed. Colonel Merrill is a native of Pennsylvania, and a graduate of West Point before the war.

By direction of the General Assembly of Rhode Island, the monument to its soldiers and sailors who fell in the war is to be dedicated on Saturday, 16th inst., and Governor Padeford has issued a proclamation making that day a public holiday throughout the State.

LESSONS OF THE DECADE APPLIED.—NO. VIII.

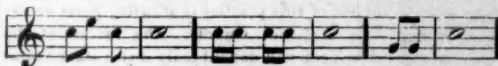
MARCHING.—The squad being perfectly steady and compact in its facings, the instructor next proceeds to have them march in rank, and halt. He therefore commands: *Squad forward—Guide centre—MARCH!* At the command *forward*, each man will rest the weight of the body on the right leg. At the word "*March*" all step off with the left foot together, the body erect, the arms hanging by the sides without swinging, the upper part of the body slightly inclined forward, the length of the step twenty-six inches, the cadence of the time ninety steps a minute, called "common time." The line will be regulated by the centre man, or guide, who will step short, take some two objects in line, in front, to keep him straight, and march directly on them. The instructor will generally march before this guide, who is responsible for the direction of the march in line. The instructor will watch him specially, and see that he takes two objects before him for points of direction, and marches straight toward them, without swerving right or left. The rest regulate on him, yielding to pressure from the centre, and resisting that at the flanks. The man at the head of the file is in like manner responsible for its march, and will be also attended to by the instructor, who will march beside him.

After marching a short distance, the instructor commands, *Squad—HALT!* The word "*Halt*" will be pronounced when the left foot is foremost, and at the word all will halt in an instant, together, when the instructor dresses the ranks, which will most probably be disordered at first.

To quicken the step, the instructor commands, *Quick—MARCH!* This pace will be one hundred and twenty steps a minute, and of twenty-eight inches in length. The squad will then halt, and facing about, repeat in the opposite direction, halting very frequently, and practising both steps and halts till they march together and halt together without any disorder or crowding, keeping their alignment by the touch of the elbows and an occasional glance at the centre, and halting bodily, so as to need but little dressing. The squad will then face to the right and left in succession, and march in file in the same steps, preserving intervals with care and keeping accurate time, watching the shoulders of their file-leaders and not their feet, and keeping exactly behind them, so that the march is made as easy as in ranks.

The first three days will be occupied in dressing, facing, and marching, in rank and file; and the men will be kept at it till they all execute these motions as one man, and obey the sound of the bugle as below.

FORWARD—MARCH! QUICK—MARCH! HALT!



The men marching in line at common time, the instructor next commands, *Squad to the right—MARCH!* At the word "*March*," all the men wheel on the left heel suddenly, and, setting down the right foot by the left, step off with the left in the new direction, in file. If there is any confusion and crowding, the instructor halts the squad, fronts them again, marches forward, and repeats the movements, showing the men by example the way to effect it. The squad thus marching in file, the instructor to get them in rank commands, *Squad to the left—MARCH!* At the word "*March*," all wheel on the left heel, drop the right by it, and step off with the left in the new direction in line. (N. B. The word "*March*" will be uttered in all cases when the left foot is foremost, and all marches will commence with the left foot.)

These two changes will be rung all round the compass, at common time, and then at quick time, and the instructor will then command, *Squad about—MARCH!* At the word "*March*" the left foot being foremost, set it down and wheel about suddenly on the left foot, stepping off with the left again, which will be found to be in the rear by the change of face. The about march will first be executed in line, and afterward in file, first in common time, and then at quick time, till the men do it without crowding and as one man. The bugle signals for change of direction are the same as right, left, and about face.

OBLIQUE MARCH.—The squad being in line, the instructor commands, *Right oblique—MARCH!* The men will turn to the right at an angle of 45 degrees and step off, each man having his right shoulder behind his file-leader's left, resuming the first direction at the command "*Forward*." *Left oblique—MARCH!* is executed in the same way, by inverse means.

The men now being formed in line, the instructor next commands, *Squad double quick—MARCH!* At the word "*double quick*" all place the hands, closed, under the breast, the elbows bent, the forearm level; lean the weight on the right leg, and lean slightly forward, bending the left knee and raising the heel. At the word "*March*" all move off at a slow trot, the time one hundred and eighty steps a minute, length of step thirty-three inches.

The double quick will be used at first sparingly, but after the men can do it well the former lessons should be executed at this pace, namely, right and left march, and about and oblique march.

The instructor next commands, *Mark time—MARCH!* when the men move their feet at the previous pace, but without gaining ground at all. This movement is used during temporary stoppages, when marching.

THE NATIONAL GUARD.

THE RIFLE PRACTICE ASSOCIATION.—In pursuance to a call issued from the office of the ARMY AND NAVY JOURNAL, an informal meeting of those interested in the formation of a rifle association for the National Guard was held on Monday last at the office of the JOURNAL to provide some plan of organization, and to take measures to infuse some life into the dormant spirit of our National Guardsmen relative to rifle practice. The meeting, which was quite informal in its character, was organized by the choice of Major Geo. Moore Smith of the Seventh as chairman, and Major Powell secretary. After some few preliminaries, Colonel Church introduced the subject for which they had assembled by reading letters from prominent officers of the State service, expressing pleasure at the prospect of the formation of a rifle practice association, and offering individual support and co-operation in its maintenance, and one from the Governor expressing his readiness to co-operate in any movement for increasing the efficiency of the National Guard. Colonel Fred. A. Mason of the Thirteenth Infantry was then chosen as chairman of a committee on organization; other members of the committee comprise the following-named officers: Major-General John B. Woodward, Second division; Brigadier-Generals Augustus Funk, Second brigade, First division, and Thos. S. Dakin, Fifth brigade, Second division; Colonels Church, Rockefeller, Shaw, Major Smith, Captains Spencer, Wingate, and Adjutant Harding. This committee meet on Monday next to devise and perfect some plan of a Rifle Practice Association, at which time a general call will be issued for the attendance of members of the National Guard for the purpose of perfecting the organization on a permanent basis. Much discussion occurred during and after the adjournment of the meeting relative to the establishment of rifle ranges.

The best indication of this preliminary meeting was the earnest interest displayed by every one present in the subject of rifle practice, and the evident determination to realize the object of the gathering. It also brought out the fact that there are several officers of the National Guard who have made rifle practice the subject of much careful study, watching attentively all the movements of the English associations, and the various improvements introduced in the way of rifles, ranges, targets, etc. Moreover, the officers present gave each an encouraging report of the interest taken by other officers with him associated, but not at the meeting, in the plan for the formation of a Rifle Practice Association. It is plain that it needs only united effort and a little energetic action to secure the establishment of our American Wimbledon. The committees appointed are already at work, and we shall soon be able to give the National Guard the results of their labors. We hear from both Connecticut and Maryland that the subject of rifle practice is arousing great attention among their National Guards. The success of the movement in New York will undoubtedly incite other States to similar action, and by another season thousands of National Guards all over the country will be competing before the target. Then we may hope to realize a national rifle tournament. The daily press of New York and Brooklyn give the heartiest encouragement to the movement, and intelligent articles on the subject of encouraging rifle practice have appeared in the *Times*, the *Commercial Advertiser*, and the *Evening Mail*.

TARGETS FOR RIFLE PRACTICE.—The question as to the substance of which targets for rifle practice should be formed is one of no minor importance. Iron has in England been substituted for wooden targets, and the following suggestion from "Volunteer Cavalryman" on the subject of sand-bags for targets is a valuable one:

To the Editor of the Army and Navy Journal.

SIR: In common with many others, I have been much interested and profited by Captain Wingate's valuable treatise on "Rifle Practice" published in your columns; so much so that I have concluded to withdraw that portion of the "Lessons of the Decade" which treats of carbines and distance drill in favor of the man who has made that his specialty. Will you allow me to say a word as to targets?

It is that, instead of an iron backing, as used at Wimbledon and in the English schools, one be made of a wall of sand-bags, as thick as necessary. An iron backing spoils the bullets, and causes a spattering of lead, sometimes very dangerous to the marker. A backing of sand-bags obviates this entirely, and saves the bullets uninjured. To find them at the end of the day, all that has to be done is to select those sand-bags that have holes only on one side. The bullets are sure to be in them, and the bag can be emptied on a wire screen, the sand sifted through into another bag, and the bullets preserved almost uninjured.

The most economical way to do this would be to erect from three to six walls of single bag thickness, one behind the other, at about six feet from each other. A glance would thus determine where the bullets were, and save the sifting of empty bags. It may be objected that the sand would sift out through the holes and ruin your wall. It would to a small extent no doubt, but not sufficient to prevent the sand staying together, and by the simple expedient of playing a hose over every wall daily, so as to wet and pack the sand, the bags would last through a day's shooting, and could be

patched with paste and brown paper every night as they stood in the walls that are penetrated.

The bags that hold the bullets, indeed, could be left for a whole week without being disturbed, for that matter, and the saving in bullets would pay the expense of new bags. In large quantities, as after a week's practice by a whole brigade, this saving would be no small amount. If our new Rifle Association should try this experiment on any rifle range they may purchase, I think it probable that it will be found to pay, both in first cost of target and saving of lead.

In Belgium they use a pasteboard target and a sand-bank, but many bullets are lost, and the sifting process is laborious. By adopting sand-bags, with the sand wetted, the minimum of labor is secured, and perhaps some valuable data as to penetration of bullets from different rifles at various ranges may be secured in the course of a year's practice.

VOLUNTEER CAVALRYMAN.

THE FORTY-SEVENTH'S FETE.—The preparations for the extensive military reception to be given the battalion of the Second Connecticut and Twelfth New York on the 13th inst. in Brooklyn, E. D., are about all completed, and the programme, as already published in the JOURNAL, will be fully adhered to. The citizens of the Borough have very judiciously united with the members of the Forty-seventh, and propose to aid them liberally on the occasion. Mayor Kalbfleisch of Brooklyn has, we understand, given official countenance to the whole proceedings, and proposes uniting with the regiment, and has accepted an invitation to review the military pageant, or receive a military salute, at some convenient position along the line of march. Citizens will illuminate their houses along the route, and the quantity of fireworks to be set off is reported as inexhaustible. The "Grays" and "National Blues" of New Haven will parade in full numbers and in full-dress uniforms, and will be accompanied by a large number of guests, including Mayor Lewis of New Haven and many city officials, Colonel Smith, staff, and other officers of the Second. Many of the Governor's staff will likewise accompany the battalion. Colonel Austen and the officers of the Forty-seventh fully understand the duties of such an occasion; and their guests, the members of the Second Connecticut and Twelfth New York, may expect the most hospitable treatment. The following General Orders issued from headquarters of the Forty-seventh give additional particulars relative to this grand military fete undertaken by this excellent command:

This regiment will assemble at the armory in dress uniforms (white cross-belts) on Wednesday, September 6. Roll call of companies at 8 p. m.

Members not provided with white cross-belts may purchase the same upon application to the quartermaster at the armory on the evening of the 6th.

The regiment will assemble at the armory in dress uniform (white cross-belts) on Wednesday, September 13, to parade in honor of the "New Haven Grays" and "National Blues" of New Haven, Second regiment Connecticut N. G., and the Twelfth regiment N. G. S. N. Y. Roll call of companies at 7:30 a. m. promptly.

The field and staff will parade dismounted on the 6th inst.; mounted on the 13th inst.; and will report to the commandant at the hour designated for company roll call. The non-commissioned staff and drum corps will report to the adjutant on both occasions at the hours of assembly. The band will report to the acting adjutant at the armory on Wednesday, September 13, at 2 o'clock p. m. Companies A, B, and E of this regiment are hereby detailed to parade as special escort to the "New Haven Grays" and "National Blues" upon their arrival by New Haven boat, and will assemble at the armory in dress uniform (white cross-belts) on Wednesday, September 13, at 2 o'clock p. m. Members of the regiment are invited to parade in the ranks of the companies detailed.

Captain A. A. Doughty of Company B will command, and Lieutenant W. C. Wetherbee is hereby detailed as acting adjutant of the battalion. Sergeant Standard-Bearer McCormick is hereby detailed for special duty, and will report in dress uniform to the acting adjutant at 2 o'clock p. m.

TWELFTH INFANTRY.—This command, having accepted the invitation of the Forty-seventh of Brooklyn to partake with the New Haven companies of its hospitality on the 13th inst., has made arrangements for the transportation of the regiment per steamer from the foot of Thirty-fourth street, N. R., to Brooklyn, on the evening of the event. This shows remarkable enterprise, thereby saving the command the long and disagreeable march from and to its armory up town. The march from Thirty-second and Broadway to Grand street ferry is anything but pleasant to contemplate, but that could perhaps be very well endured; but the return, after the extra march in the Borough, is "what knocks," as the boys say, especially after the "reception," for every one knows that continuous cheering, its consequent excitement, etc., have a fatiguing effect on troops. The Twelfth, therefore, to overcome these evils has chartered a large steamer, which will transport the members to and from the Borough thereby saving trouble and fatigue to the members. The Twelfth is invited to partake of "Our Owns" courtesies, in part reciprocal of the escort offered that regiment on its return from its recent excursion to Poughkeepsie, N. Y.

General Orders issued by Colonel Ward state that "the invitation of the Forty-seventh regiment N. G. S. N. Y. to visit Brooklyn, E. D., having been accepted, this command will parade in full-dress uniform, plume, and white gloves, on Wednesday evening, the 13th inst. Assembly at regimental armory at 6:15 o'clock p. m. Field and staff will report to the colonel (dismounted), non-commissioned staff, band, field music, color-guard, and general guides, to the adjutant at assembly."

BATTERY C, FIRST DIVISION.—The members of this command on Monday next proceed in full uniform to the farm of Mr. George Connan at East New York for target practice with the field pieces or howitzers of the battery. The battery, under the command of Captain Wm. Schilling, assemble at 192 Madison street at 5 o'clock A. M. Artillery prac-

tice, if practical in its results and properly carried out, will greatly add to the efficiency of our National Guard batteries, but these practices are altogether of too rare occurrence to show good results. We trust, however, like Battery C, other artillery commands will exhibit more enterprise in these matters. The great drawback to this kind of target practice is the expense and risk, very few localities in this vicinity offering suitable accommodations for the practice.

THE STATE EXAMINING BOARD.—We had long supposed that through the agency of the State Examining Board the National Guard had sure means of getting rid of those incompetent officers who are wont to fasten themselves on the service. We fear, however, that this board has lost its power because of its infrequent meetings. We do not for a moment doubt the capacity of its members; we know them to be officers of experience and military knowledge; but we do think the State authorities are pursuing an unwise course by ordering the sessions or meetings of the board not more than twice a year. Under the former administration, if we remember correctly, the Examining Board met every two months. The present board has not assembled since last winter; meanwhile National Guard organizations are compelled to suffer from the well-known incapacity of some of their officers, who remain an incubus on the service. It, however, may be said that these incompetent officers should never have been commissioned, and that the brigade or regimental examining boards should have rejected them at the outset. This, perhaps, is all very true, and we find from personal knowledge that these constituted boards are very frequently at fault; but to overcome their defects the only and final remedy has been the State board. Moreover, officers frequently become subjects for this board by constant neglect of duty; many of them but rarely attend drills, and appear in uniform on festive occasions only. These officers apparently sought commissions for no other purpose, and although they must be aware that their neglect of duty seriously prejudices the efficiency of the organization to which they are attached, they obstinately refuse to resign. The usual recourse in such cases has been the State board; but if this body is to assemble only once or twice a year, commanding officers will be compelled to resort to the remedy of special courts-martial, the costs of which will far exceed the mere nominal expense of the State Examining Board, which now costs the State less than \$50 every time it assembles. On the score of economy—and this is the State's present objection, we are informed, to the more frequent assembling of this board—it will be much more advisable to have the Examining Board attend to these cases than allow them to come under the jurisdiction of a special court. Constant complaints reach us relative to the infrequent sessions of this board, and we trust that the State will immediately adopt a wiser course. We learn that a meeting of the State Board has finally been called for the 28th inst., in New York city.

FIFTH INFANTRY.—The social gatherings of the drum corps of this regiment have long been held in high regard by the members thereof; in fact the drum corps and its jovial leader, Drum Major Berchet, have long been sustained as one of the institutions of the old Fifth. On Monday last in accordance with its annual custom, the corps indulged in a day's festivity at Hamilton Park, in conjunction with Company A, Captain Koss, which organization acted as escort to the drummers. As usual the general attendance was large, as also was the number of distinguished guests, among whom were General Bendix, commanding the Fifth, Adjutant Hopke, Captains Kloeber and Koss, and many other officers of the regiment. The drum corps of the Fifth New Jersey likewise enjoyed the festivity as guests of the Fifth New York. The forenoon was spent in short range marksmanship, in which the drummers showed as much skill in the handling of the rifle as the sticks; which is no little praise, by the way. The prizes consisted mainly of boxes of cigars, albums, silver watches, sets of crockery, money packages, diamond pins, etc., and last but not least, a sheep. Drummer Fassig, whose term of service expired on Monday last, and who we trust will not leave the corps, won the first prize, he having been decided the best marksman in the corps. During the festival Drum Major Berchet was made the happy possessor of a *go-at* of the masculine gender, which animal we trust will not prove a white elephant to its owner. The drum major is already heavy, so to speak, on the goatee, and we cannot conceive how his friends could induce him to indulge his propensity in that line any further. The corps paraded thirty-two members in all, and had a band of sixteen pieces. Dancing was the main enjoyment day and evening, and every matter was conducted characteristically well.

IMPORTANT DECISION.—THE IMPRISONMENT ACT SUSTAINED.

—The National Guard has been agitated and its efficiency somewhat weakened from time to time by the diverse decisions in the cases thus far tried before our courts relative to the imprisonment of delinquent members of the State service, but at the same time it must be borne in mind that all the cases thus far tried have turned, first, on the technical objections to the form of the warrant, and secondly, on the ground that the language of the act did not authorize personal arrests. No decision to our knowledge expressly against the constitutionality of the act has ever been made, and even those rendered in the National Guard cases heretofore brought before the courts have, we think, without exception, been the decision of a single judge. The case which we append, however, was expressly prepared to bring the whole matter before the General Term, and the result is

unanimously in favor of the National Guard. The case, involving every point, which was tried before Judges Gilbert, Joseph T. Barnard, and Pratt at the General Term of the Supreme Court of New York, in the Second Judicial Department at Poughkeepsie, was that of *The People ex rel. Edward P. Underwood v. Major Edward S. Daniell*, major and president of court-martial of the Thirteenth regiment N. G. S. N. Y. We have the full points of the case before us. They cover every objection raised relative to the constitutionality of the law of 1870 in regard to the power of courts-martial to imprison delinquents, which points were ably argued by General James B. Craig, the Judge-Advocate-General of the State of New York, the decision of the judges above mentioned unanimously sustaining the argument in every particular. We have not space at this time to publish in full the decision of the judges in this important case, but shall endeavor to do so in our next issue. The case will undoubtedly be carried to the Court of Appeals, which will, however, be a mere formality and the decision of the Supreme Court sustained in every detail.

FIFTY-FIFTH INFANTRY.—Recruiting in this command has been progressing very rapidly during the past season. Premiums to the amount of some \$600 have been offered by the field and staff to stimulate recruitings, to be given at the fall inspection of the regiment. White trousers, we are glad to learn, have been adopted as a portion of the bill of dress. The Fifty-fifth do not seem to have felt seriously the effect of the secession of the few Frenchmen who at one time paraded in its ranks; and although it cannot consistently claim the name of "Garde Lafayette," it still asserts itself as a regiment of the State militia, composed of men who are ready at all times to do their duty and enforce the law of the land, irrespective of the nationality of its members. The days of judging and designating the character of a regiment by the composition of its members are happily past, and, like true patriots, in the National Guard we know no French, German, or Irish organizations, but we claim the natural privileges of native or adopted citizens of a free land to protect as soldiers the rights of every resident thereof.

VARIOUS ITEMS.—Drummer William Johnson, formerly attached to the drum corps of the Thirteenth Infantry, Brooklyn, has, we learn, been appointed drum-major of the Third Infantry N. G. S. N. J. The case of the delinquent John Foster of the Twelfth Infantry, recently released by Judge Sutherland from imprisonment on a writ of *habeas corpus*, on the grounds that the prisoner was a minor when enlisted, and that the imprisonment for non-payment of military fines was illegal, is, we are informed, to be reopened very shortly. The whole subject seems to have been misrepresented by the accused, and the regiment can show that Private Foster enlisted, although a minor at the time, with full consent of his mother (since dead), and that she urged that he be compelled to perform his duty while in the service, etc. To say that imprisonment for military fines is illegal is absurd; for the law is perfectly clear, as many a delinquent has heretofore found out. This imprisonment clause of the Military Code will undoubtedly be repealed this session of the Legislature, and we shall then have to employ some other means of securing the faithfulness of our National Guardsmen. As our regiments are now constituted, there must be some law which will compel a man to do his duty, otherwise the majority of the regiments will be reduced to mere skeletons in short order. All regiments, it must be remembered, are not formed of the same class of members as the Seventh and a few other regiments, the former of which never pretends to enforce the imprisonment clause, or at least never find it necessary. The entire First brigade of M. V. militia, under General Burrill, will act as escort at the ceremonies of the laying of the corner-stone of the soldiers' monument on Boston Common on the 18th inst. The Second New Jersey, Colonel Allen, commenced its encampment on Monday last at Dover, N. J. On Friday, the 8th inst., there was a grand review before Governor Randolph and staff and a number of visitors from New York and elsewhere. On the evening of that day there was a grand dinner, followed by a promenade concert. The camp broke up to-day. The Second is a good command, and has shown remarkable enterprise in its movements. On Monday evening Sergeant-Major Wm. Heerd of the Twenty-eighth regiment was elected second lieutenant of Company F, Forty-seventh regiment. Adjutant Joseph T. Schmidt of the Twenty-eighth regiment has resigned. The "Independent Veteran Zouaves," so termed, of Troy, visited New York on Monday last. There was no reception tendered the company, which comprised some forty members, nor do the "Veterans" seem to have sought any military courtesies from the troops of this city. The main object seems to have been to enter into a drill competition with some National Guard company of New York city. In this, however, the company was disappointed; but from the appearance and movements of the company in marching through our streets, the matter of excelling it in drill did not seem a difficult task; that is, from what we know of many of the companies of the First and Second divisions, and we profess to have some little knowledge of their proficiency in drill. It would have been better, it seems to us, if the Troy company had withheld its nonsensical challenge, and visited New York as the guest of some one of its many companies, who are at all times ready to properly receive strangers. Our advice to the "Independent Veteran Zouaves" is to drop its present designation, and enter the ranks of some good National Guard

organization, and thereby acquire the respect which is sure to accrue to every well-drilled company; otherwise its efforts in drill will never amount to anything of a definite character. On the occasion of the visit of the Russian Grand Duke Alexis this fall, preparations have been made to give him a fitting military reception in this city. The First and Second divisions of the National Guard propose to unite, forming one of the finest military displays ever offered in New York. As to the preparations made by Major-General Shaler, commanding First division, we have not been advised; but we have been semi-officially informed that, in contemplation of this parade, Major-General John B. Woodward, commanding Second division, proposes to suspend the customary annual review before the Governor in October, in order to insure full ranks at the reception of the Grand Duke. On Wednesday last Company C, Sixth Infantry, Captain L. Bloom, indulged in target practice and general festivity at the Cremorne Garden. There was a goodly attendance, and every matter was faithfully attended to by an efficient committee. There is every prospect that the next annual muster of the New York troops, to be held next month, will show a large excess over the returns of last year. The different organizations of the State have shown unusual activity in recruiting. In fact, throughout the country the efficiency of National Guard troops is being constantly acknowledged, and the interest of the public in these movements is visibly on the increase. It is, however, time the National Guard was properly sustained by the public, whose support even at this late hour is nevertheless very acceptable. The improvements, additions, and general repairs to the armories of the First division of this State have for obvious reasons been rather backward during the past summer season. The work on the Ninth's armory has progressed but slowly, and this winter will not see it completed unless its commander advances the "wherewithal." The armory of the Seventy-first and many other regiments are in an unfinished condition; and as for the Fifty-fifth, nothing, comparatively speaking, has been done to its armory since it was vacated by the old disbanded Second. Captain R. B. Cable, commanding Company E, Ninth, on Wednesday last was presented on behalf of the members of Company K, of which he was formerly a member, with an elegant gold and diamond badge valued at \$250. Lieutenant Milligan, of Company K, made the presentation speech. The alleged cowardly attack upon Surgeon Higginbotham, of the Seventy-first regiment, needs no comment on our part, as the public have already formed their opinion in regard to the matter.

OUT-OF-TOWN NEWS.

RHODE ISLAND.—United Train of Artillery, Colonel Harry Allen, is preparing actively for its excursion to Philadelphia. The company is drilling three times a week, and has good turnouts at every drill. This is doing pretty well for warm weather, and shows most conclusively that the men are enthusiastic in the matter, and we trust the company's proficiency will be the practical result of this hard and warm work. Colonel Allen has the material, and regarding his energy and capabilities as an officer there remains no doubt. Colonel Allen in a letter states that the company will leave Providence on Monday evening, the 25th inst., parading eighty muskets, fourteen commissioned officers, twenty veteran members, and a band of thirty pieces, in all about one hundred and fifty. Among the invited guests who are included in the veteran corps are Major-General Burnside, Governor Sprague, Major-General Daniels, Brigadier-Generals Walker, Flagg, Mauvan, Le Favour, and Hazzard, Colonels Henry Lippitt and A. C. Eddy, and several other prominent citizens. A number of these gentlemen have already promised, and they will come. The company will arrive in Philadelphia about noon on the 26th inst., and remain there till Thursday morning, when it will take the 8 o'clock train for New York. In New York it will be tendered an escort and entertainment by the Seventy-first regiment, also by three companies of the Twenty-second and two companies of the Seventh regiment. Several military gentlemen from New York have been invited to accompany the Trains, among others General (?) Wm. C. Rogers, Major (?) Harry Ford, Captains (?) Buckley, Gurney, and Martin of the "Old Guard," whose uniform is similar to the United Train's.

CONNECTICUT.—The military excitement in and about New Haven at present is the proposed visit of a battalion of the Second Infantry to New York next week. From official sources we learn that the battalion will leave New Haven in the steamer *Edin City*, Captain Peck, on the 13th inst., at 10:15 A. M., and arrive in New York about 3:30 P. M., where it will be received by a battalion of the Forty-seventh regiment, under command of Captain A. A. Doughty, who will escort the visitors by the shortest route to Williamsburgh, to the Forty-seventh regiment armory. The invited guests comprise Colonel S. R. Smith, Lieutenant-Colonel Bario, Major Tucker, Adjutant Baker, Quartermaster Bradley, Paymaster Kimberly, Surgeon Bisell, Assistant Surgeon Riley, Chaplain Siebke. Field and staff of Second regiment Connecticut National Guard, nearly all Veteran "Grays," present; uniform, blue. The "Veteran Gray Corps" consists of Colonel Bradley, Colonel Basserman, Captain Sloat, Major Osborn, and about thirty others, mostly ex-officers of the company, under command of Colonel Bradley. The following members of Governor Jewell's staff will likewise accompany the visitors: Adjutant-General Marwin, Quartermaster-General Dickinson, Assistant Adjutant-General Fox, Assistant Quartermaster-General Blakeslee—all veteran "Grays," uniform, blue. Felaburg's band of New Haven, of 30 pieces, and New Haven Grays drum corps, under Drum-Major Skinner, head the battalion. The officers of the Grays comprise Captain

Albert C. Hendrick, First Lieutenant Newcomb M. Bassett, Second Lieutenant T. Attwater Barnes, First Sergeant Jas. B. Hood; and the uniform of the members is precisely similar to that of the New York Seventh. The additional guests are Mayor Lewis of New Haven, President of Council Stoddard, Aldermen Scott, Morse, Bunnell, Councilmen Brown, Atwater, Adriance, and others—nearly all ex-Grays—and several members of the press, including Fowler of the *Courier* and Osborn of the *Register*, both ex-members of the "Grays." From this it would seem that the battalion will be composed almost exclusively of members of the New Haven Grays, whereas we and others had been led to suppose that it was a conjoint excursion of the Grays and National Blues. There may, however, be some misunderstanding on our part, and our only regret is that the entire Second was not prepared to enter the hospitable precincts of New York and Brooklyn. The welcome, we feel assured, would be as generous toward the regiment as it will be to the New Haven Grays or the companies that propose the visit. The New York and Brooklyn troops, however, feel particularly a deep sense of gratitude to the New Haven companies, and it is their wish at this time to reciprocate in part for the numerous favors received in times past at their hands. We trust, however, at some future time, when the regiment has obtained its recently adopted full dress uniform and its breech-loaders, it will visit New York in a body. In the mean time the New York troops will endeavor to be satisfied with the fine sample of the Second about to visit them.

MARYLAND TARGET PRACTICE.—Company I, Fifth regiment Maryland N. G., Captain John W. Torsch commanding, made an excursion on the 21st ult. in a tug-boat to "Brown's Pavilion," on the Potomac, for the purpose of affording the members of the company some exercise in target-shooting. The company, numbering some fifty men, under command of Captain Torsch and Lieutenant Fowler, was accompanied by General R. H. Carr, Captain Brown, Lieutenant Rodge-s, and others as invited guests. To awaken an interest in the shooting, four prizes were offered to the four best shots, three to the members of the company, and one to the invited guests. The first prize was a beautiful gold regimental badge for the best shot in the company, and a leather medal to the worst shot. All of the prizes were very fine, and every member did his best to win them. The company arrived at the Pavilion about 3 o'clock, and, after a short drill, were dismissed, and preparations made for shooting. The target was placed across the river, a distance of about 125 yards, and was in charge of Drum-Major G. Bruce Barrett. The shooting was with the Springfield breech-loader, which the regiment has adopted, and which proved to be a most effective weapon. The targets were paper ones, which necessarily prolonged the shooting, but it was finely finished about 5:30. When the firing was over, it was announced that Private Roth had won the first prize, Captain O'Connor the second, and Private Guild the third, which was the leather one; the remaining one was won by Lieutenant Rodgers. The shooting was excellent, and it was very evident that the members were experts in the use of the rifle; the targets were completely riddled with shot, and it was a very hard matter to decide who should have the title of "champion shot."

After the shooting the company and invited guests repaired to the dining-room and partook of an elegant supper. After supper the party re-embarked on board the tug, and, after giving cheers for Mr. Brown, steamed off for the city. During the afternoon a number of lady friends of the company came down in carriages and witnessed the shooting. The arrangements for the occasion, which was a very pleasant one throughout, were under the direction of a committee consisting of Hon. John M. Travers, Corporal Elin Klautsbeck, and Private William Volkmar, to whom the guests are indebted for the many kindnesses shown them. This company is the live company of the Fifth regiment; Captain Torsch, its able commander, is a perfect gentleman and an able and efficient officer, and is beloved by all his men, as is also Lieutenant Fowler. As soon as the new armory is completed and the new dress uniforms are made, the regiment and respective companies thereof will be in a position to receive their comrades in arms from sister States. Company I is especially noted for its hospitality, and its entertainments are always well attended. Captain Torsch and the members of his company are agitating the Hythe system of rifle-shooting, and would no doubt have conducted their recent shooting match according to that system had they been able to perfect the necessary arrangements; and it is very evident that this system will be adopted by Company I, if not by the entire Fifth regiment. The regiment at present is in very fine condition, and many desirable additions are daily being made to its ranks.

ANSWERS TO CORRESPONDENTS.

SAN FRANCISCO.—We are unable to answer your inquiries in regard to Lieutenant Cushing's expedition which resulted in sinking the Rebel iron-clad *Albatross*.

PRESIDIO.—1. Undress parade in the battalion of cadets at the Military Academy is conducted as follows: At the "assembly" the four companies form without arms on their respective parades, which are upon the same line, and about fifteen yards apart. The first sergeants immediately call the rolls, and then close their companies in on the right centre (B) company, which stands fast. The adjutant takes post in front of the centre, and all officers (without side arms when in barracks) join their companies. The captains receive the reports of the sergeants, transmit them to the officer of the day, call their companies to attention and dress them on the centre, then take their posts, and, after commanding, "Parade—Rest," assume that position themselves. The field music, under charge of the drum-major, has meantime taken post ten paces on the right, and when the last company has been brought to parade rest the adjutant commands, "Beat off;" at this the music, remaining in its place, beats three ruffles, the retreat, and concludes with three ruffles more. At the last tap the gun is fired, and the adjutant, who has stood at parade rest during the beat, comes to "attention," commands, "Attention—BATTALION," publishes the orders of the day, the detail for the next, and the delinquencies of the day previous. He then commands, "Break ranks—MARCH," or at certain seasons turns the battalion over to the senior captain to be marched to supper. In camp, when it rains hard, the companies remain in their respective grounds, standing at parade rest while the retreat is beaten on the color line. Orders, etc., are subsequently published in the mess hall. If the rain is slight, undress parade is held on the color line, as above described, save that in camp the commissioned officers wear their side arms.

2. The flag is always lowered at evening gunfire, or, where there is no gun, at the last note of drum or bugle. At West Point, should the gun miss fire at parade, the men at the halliards ordinarily wait until the piece is reprimed and discharged. Raising the flag at the Academy has not been conducted with the same precision. Properly speaking, the flag should float during the entire "military day," i. e., from gun fire to gun fire; but the custom has not prevailed at West Point, because reveille is at 6 A. M. in midwinter, at which time it is often pitch dark, and the flag is sometimes not raised until guard mounting. The gun should be fired at the first note of the reveille and the last note at retreat.

FOREIGN MILITARY AND NAVAL ITEMS.

THE London Army and Navy Gazette asks: "Why will Frenchmen writing about our army insist, when speaking of the Guards, on talking about the Coldstream regiment? We trust that in the event of the gallant fellows thus denominated ever entering Paris they will be as highly appreciated as the nostrum."

THE colonial government of Australia is recognizing the necessity of national arming by training the children to the use of the rifle and concerted movement. An edict has gone forth for the drilling of the National School boys wherever such drilling is possible, and most of the large private schools have corps of their own.

THE British armor-plated steamship-of-war *Repulse* has been ashore at Sheerness, but has been got off. The damage to the vessel is yet unknown. The London journals contain sharp criticisms upon the navy and its administration. A naval court-martial has been ordered by the British Admiralty to thoroughly investigate the causes of the accident.

THE preparations for the manufacture of the Martini-Henry rifle and ammunition on a large scale are now far advanced at the Government factories, and probably about 10,000 of these rifles, with 2,000,000 rounds of ammunition, will be supplied during the present year. **THE Pall Mall Gazette** says: "It is, perhaps, the knowledge of this circumstance which has stimulated into renewed activity the opposition of those who are unfavorably disposed towards the Government arm."

THE *Patrie* reports that great military preparations are being made in Russia, and says that the Emperor Alexander, accompanied by General Leflo, the French ambassador, visited the camp at Tsarskoe-Selo on the 12th inst. The same journal alleges that Prussia is completing the cadres of her regiments, converting or perfecting her armaments, and collecting stores in hitherto unheard-of proportions. The *Patrie* expresses its belief that these preparations on the part of Prussia are aimed against Russia.

THE new fort at Sheerness, Garrison Point, will soon be completed. The whole of the masonry work was finished some time since, and is now sufficiently firm to allow the arming operations to be proceeded with. About half of the huge iron plates which are to protect the embrasures have been fixed and 14 of the 88 heavy rifled guns with which the fort is to be armed and mounted. The guns placed in position are all 9-inch cannons weighing 12 tons each and throwing projectiles of 250 lbs. weight with a power considered capable of penetrating any ordinary iron-clad ship at ranges of about 1,000 yards.

MESSERS. Spencelayh and Archer, of the Medway Iron Works, Chatham, have just completed the manufacture of 500 of the largest kind of torpedoes, each to contain a charge of 5 cwt. of gun-cotton, the whole of which have been delivered at the Royal Arsenal, Woolwich. A large quantity of torpedoes, each to contain explosive charges of 3 cwt. of gun-cotton, have likewise been manufactured and forwarded to Woolwich; and the same firm have now taken a contract for the manufacture of a large number of a new description of torpedo, each intended to contain a charge of 1 cwt. of gun-cotton.

THE Russian fortifications at the railway stations of Radziwillow and Wolocysk are being rapidly proceeded with. The former is the last station towards the frontier of the Brest-Berdyczew-Radziwillow Railway. Both stations are of the utmost strategical importance, and have an uninterrupted communication with the Galician network of railways. At Radziwillow a citadel with detached forts will be erected. The fortifications are to be completed within three years. A similar course has been adopted at Wolocysk. Other fortifications are already nearly completed, notably in the extension of the works at Lithuanian Brest and Kieff, and their strengthening by detached forts.

THE *Shipping and Mercantile Gazette* says: "The Admiralty have resolved to make an example of those officers who are responsible for the stranding of the *Agincourt* on the Pearl Rock, and who have not been dealt with by the court-martial. Vice-Admiral Wellesley and Rear-Admiral Wilmot, with the captains of the ships in which they carried their flags, have been superseded; and the senior navigating officer of the flag-ship, for advising the course which resulted in the catastrophe, has been placed upon half-pay. These are severe sentences; but the country at large, and the naval service in particular, will probably not consider them more severe than the circumstances warrant. There was really no excuse for the stranding of the *Agincourt*. It was the plain result of culpable neglect, or of unseamanlike ignorance, or of both combined."

OUR Congressional masters can learn by comparing our almost silent navy-yards with the work done abroad, how far we are from being entitled to call ourselves a naval power. The English have under construction the *Fury*, armor-plated turret ship, 4 guns, 5,080 tons, and 1,000 horse-power engines, building at Pembroke; the *Blonde*, iron steam frigate, cased with wood, 26 guns, 4,089 tons, 1,000 horse-power engines, building at Portsmouth; the *Thunderer*, armor-plated turret ship, of 4 guns, 4,400 tons, and 800 horse-power engines, building at Jarrow-on-Tyne; the *Raleigh*, iron frigate sheathed with wood, 23 guns, 3,210 tons, and 800 horse-power engines, building at Chatham dockyard; the *Hecate* and *Hydra*, double screw iron armor-plated turret ships, of 4 guns, 2,107 tons, and engines of 350 horse-power each, building at Poplar and Glasgow; the *Frolic*, *Kestrel*, *Ready*, and *Riflemen*, double-screw composite gun-vessels, of 4 guns, 452 tons, and 100 horse-power engines each, building at Chatham.

A COMMITTEE is sitting at the office of the Director of Artillery and Stores, Woolwich, under instructions from the War Office, to make a thorough investigation into

the equipment of the royal horse artillery and field batteries, with a view, if possible, of reducing the dead weight behind the team, in order to allow for the increased weight of ammunition which will follow upon the introduction of the 16-pounder gun. The simple plan of reducing the number of charges in the tinder boxes, first thought of, will not probably be entertained, it being felt that the necessities of the artillery service rather point to an increase in the supply of ammunition to the gun, so as to render it as far as possible independent of the wagons in the rear, and enable the batteries to keep in action as long as possible without reinforcements. The advocates of increasing the power of field artillery are not all content with the advance from 12-pounders to 16-pounders, but a 25-pounder field gun, made only as an experiment, has been turned out of the royal gun factories, and will shortly be tried. It is not so much larger than the present service guns as the figures would indicate, but it is necessarily much heavier than any gun which it has hitherto been customary to employ in field manoeuvres.

A COMMUNICATION, addressed by M. Tissandier to the Academy of Sciences, and published in a recent number of *Comptes Rendus*, gives particulars of the work performed by the postal balloon service during the late siege of Paris. The first four balloons all passed over the Prussian lines in safety, and descended without accident. Of those which left subsequently, five, viz.: the *Bretagne*, which fell at Verdun; the *Galilee*, which descended at Chartres; the *Daguerre*, at Ferrières; the *Ville de Paris*, at Wetzlar in Prussia; and the General Chanzy, at Rottenburg in Bavaria, were captured by the Prussians. Two were lost. The *Jaquard*, in charge of the seaman Prince, left Paris at 11 P. M. on October 30, and was never seen again. There was a report in England that she was seen out at sea in the neighborhood of Plymouth. Another balloon, conducted by a soldier named Laonze, was lost at sea in sight of Rochelle, on January 27, 1871. The *Ville d'Orléans*, in charge of M. Rolier, after traversing the North Sea, reached the coast of Norway in safety; a voyage of 1,600 kilometres, or about a thousand English miles, performed in fifteen hours. The total number of postal balloons which quitted Paris between September 23, 1870, and January 28, 1871, was sixty-four. They carried 9,000 kilogrammes—or nearly nine tons—of despatches, which would be equivalent to three million letters of three grammes each, the maximum weight allowed, besides three hundred and fifty-four courier pigeons, sixty-four aéronauts, and ninety-one passengers.

Les Mondes has an article, by Mr. Zaliwski, of Paris, on the explosion of explosive compounds, as follows:—"1. The explosive properties of inflammable matter are not dependent on the normal temperature of the atmosphere, but upon its hygrometric state. Thus, explosions will take place in winter as well as in summer, if the phenomena to which I refer are not attended to, and, as a proof, I have only to mention the repeated 'accidents' at the factory of Mr. Fontaine, and those that took place during the war at Sablonville and Grenelle. In short, gunpowders, during a drought, acquire spontaneous explosive qualities, even without any elevation of temperature, and they are also more ready to act upon and communicate the smallest spark. Manufacturers ought to watch carefully the hygrometric condition of the atmosphere. 2. The least quantity of oxalic acid, by a catalytic effect that precedes the abandonment of the basic particle of water of this substance, is sufficient to prevent spontaneous action of explosive matters, and the remainder of the acid, which can, as is well known, be divided into oxide of carbon and carbonic acid, has no power to modify the ballistic properties of the powders. In order to prove, experimentally, the principal fact of which I am speaking, it will be sufficient to heat a pulverulent mixture of sulphur and chlorate of potash, or any other combustible substance, ready to furnish detonating compounds; and to add to it, previously, a certain quantity of oxalic acid, about one-third; and then, even when the temperature is raised to the fusion of solid bodies, there is no explosion. Consequently, the cause is a simple one, and the preservative means are elementary and practical; and permit, besides, with some modifications in the quantities, the transformation of powders called 'brisantes' into gunpowders proper."

A BRITISH officer who has visited Sedan gives the following account of the place: "I was very glad I took advice and had a carriage from Mézières; you can get by that means on to the battle-field in an hour and a half. It is a question whether you should go by the right bank of the Meuse, over the hills along the Belgian frontier, as we did. You see the country better; but there is a much easier road up the other bank to the passage used by the Crown Prince's army at Donchery, close by which one stops to see the cottage where Napoleon and Bismarck had their world-famous interview on the 2d September. Yet if one goes by the other road you have the advantage of perceiving how easily MacMahon might have escaped the day before the battle had he fully known his danger; but then you must drive out to Donchery to make the visit complete. I had no idea that Sedan is so thoroughly low and entirely commanded. What a blunder to have made such a little mousetrap the rallying point for an army of 100,000 men! The Prussians very sensibly have kept the works of the citadel open to travellers, contrary to the rules at their other fortresses. So on arriving at Sedan (where there is a capital hotel), you ascend at once to the summit, and have a really magnificent panorama of the whole battle-field. With Captain Fitzgeorge's little book and plan, the whole of the great drama can be followed out by the eye from this point. I was sorry to find that the trade in relics is being actively driven; of course the true ones will all soon be sold off, and the Louvain workshops called on to keep up the supply. That excellent charitable Belgian company (I forget the name) which undertook the inhumation has now finished its work by dragging the Meuse thoroughly, and interring the results, which were masses of bones of horses and equipments. Few human remains are in any of their last mounds. I left by the rail for Luxembourg

through Thionville, which is in tolerable order. No custom-house!"

THE London Army and Navy Gazette has formed a scheme for the adjustment of army and navy rank, and says: "If it is necessary that the officers of the sister services should have relative rank, it is certainly desirable that the same title, when used in both services, should signify corresponding rank. At present a captain in the navy over three years' seniority ranks with a colonel in the army, and under three years with a lieutenant-colonel; but to the uninitiated they are only captains. Commanders also rank with lieutenant-colonels. Naval lieutenants over eight years rank with majors, under eight years with an army captain; but to the uninitiated, again, they are only lieutenants." To remedy this state of affairs it is proposed to arrange the relative rank as follows:

Admiral of the Fleet.....	Field Marshal.
Admiral.....	General.
Vice-Admiral.....	Lieutenant-General.
Rear-Admiral.....	Major-General.
Commodore of the Fleet.....	Brigadier-General.
Commodore.....	Colonel.
Commander.....	Lieutenant-Colonel.
Lieutenant-Commander.....	Major.
Captain.....	Captain.
Lieutenant.....	Lieutenant.
Midshipman.....	Ensign.

At present a chief engineer may rank with a military captain, a major, or a lieutenant-colonel, and yet sign himself chief engineer, and this can easily be remedied in the following way: The civil officers ranking with commanders might be respectively styled staff engineer, staff surgeon, staff naval instructor, and staff paymaster, and continued downward as follows: Ranking with the proposed lieutenant-commander—Senior engineer, senior surgeon, senior paymaster, and senior naval instructor. Ranking with the proposed captain—Engineer, surgeon, paymaster, and naval instructor. Ranking with the proposed lieutenant—Assistant engineer, assistant surgeon, and assistant paymaster. Ranking with the proposed midshipman—Engineers' assistant and clerk. This would involve calling the present chief engineers under eight years engineer, and the present engineers assistant engineers, while the present surgeons would become senior surgeons, and the assistant surgeons over six years' seniority would be called surgeons, but each man's denomination would show clearly his relative rank. At present surgeons rank with majors, and assistant surgeons over six years with captains in the army, but both wear the same uniform. To render this scheme complete, it only requires to institute equality of pay, half pay, and retirements, so as to place all officers of relative rank on a perfectly equal footing, and the statesman who does this will do more to make the officers of the Royal Navy contented and to remove cause of jealousy and heartburning in the Royal Navy than any previous naval reformer.

THE following is the reply of Secretary Belknap to the letter of Mayor Hall, of New York, transmitting certain resolutions adopted by the Board of Health of that city:

WAR DEPARTMENT, WASHINGTON CITY, }
August 31, 1871. }

Hon. A. O. Hall, Mayor of the City of New York.

Sir: I have the honor to acknowledge the receipt of your communication of the 21st instant, transmitting a copy of a preamble and resolutions adopted by the Board of Health of the city of New York, requesting the Secretary of War to issue the necessary orders requiring the commanding officer or officers of the military stations within the limits of the city of New York to make prompt and accurate reports of all contagious, infectious, and pestilential diseases, as described and enumerated in section 5 of the code of sanitary ordinances herewith transmitted, now existing or hereafter occurring among said troops in their command, and also a weekly statement of all deaths occurring among such troops, together with the cause or causes of death in each case; and further requiring such officer or officers to faithfully enforce such sanitary ordinances and regulations as this board may from time to time adopt.

In answer to this request I have to state that the utmost vigilance in sanitary matters has always been exercised by the military authorities at the posts in New York harbor as elsewhere, and the experience of years has shown that it may safely be left under the control of officers responsible to the War Department for the proper performance of that duty. To place these posts in any manner under the direction of the Board of Health would deprive the military authorities of that complete control over its officers and property which this Department should always maintain, and would be subversive of military discipline without advantage to the health of the city or the posts. Very respectfully your obedient servant,
W. W. BELKNAP, Secretary of War.

BIRTH.

DUDLEY.—August 17, at Fort Cape Disappointment, Washington Territory, a son to the wife of Lieutenant Edgar S. Dudley, Second Artillery.

MARRIED.

[Announcements of Marriages should be paid for at the rate of 50 cents each.]

BACON—LOBAN.—At the Presbyterian church in Frankfort, Ky., at half past two o'clock P. M., August 29, 1871, by Rev. J. A. Newbitt, JOHN M. BACON, U. S. A., to Miss CARRIE LOBAN, of that city. (No cards.)

DIED.

ROGERS.—At Fort D. A. Russell, W. T., July 21, 1871, FLORENCE daughter of Lizzie and Brevet Captain Wm. W. Rogers, U. S. A., aged six years and two months.

ROMEYN.—At Fort Lyon, C. T., August 25, 1871, JAMES THEODORE, son of Lieutenant Henry and Annie H. Romeyn, aged four months and twenty-seven days.

A FEW THOUGHTS ON THE ARTILLERY.

ITS CONDITIONS AND REQUIREMENTS.

BY AN ARTILLERY OFFICER.

[In his preface the author says: "The following reflections are submitted to officers of the artillery, with the knowledge that there is little in them that has not been said before, and probably better said. While strong in his convictions concerning the requirements of the artillery, the writer hopes that, in expressing his convictions frankly, he has not done so discourteously in any instance." We avail ourselves of this republication to correct typographical errors in the original pamphlet, which has been revised for us by the author.—EDITOR ARMY AND NAVY JOURNAL.]

Every intelligent person is aware that the science of artillery has been vastly magnified within the last ten years, but its full growth and progress can be realized only by those whose business or pleasure it has been to investigate the subject.

Although the changes and improvements have been due to many years of study and experiment, their rapid development has been brought about by the wars of the last dozen years. Within this period we may place the introduction of rifled cannon, smooth-bored hollow-cast guns of extraordinary calibre, mammoth powder, torpedoes, iron-clads, and many other inventions.

An officer well versed in the science of artillery, as taught a few years since, would be ignorant of his profession now had he learned nothing new. Then the light battery was looked upon as the "basis of all instruction in artillery," and to be an accomplished drill-master was the gauge of success. The command of a mounted battery was the highest honor offered to the artilleryman, and the foot batteries were little more than stepping-stones to this position. The subject of heavy artillery was thought to be very well mastered by a knowledge of the manual of the piece, mechanical manoeuvres with guns, the largest of which weighed only about 15,000 pounds, and a few general facts relating to ranges and ammunition.

At present, though the command of a mounted battery is no less an honorable position, and one which requires some unusual personal characteristics to insure full success, its relative importance has greatly decreased.

Our field artillery embraces but two kinds of guns, using but one kind of powder; the ammunition is fixed at the arsenals, the charges are unvarying and independent of the range; the ranges are confined to a few degrees of elevation, and the habitual fire is the simplest known—the direct fire. Nor is there now the scope for the judgment, the dash, and enterprise which, in the days of short-ranged and muzzle-loading small-arms, went so far in making up the character of the model battery commander. Batteries lean far more heavily on the infantry for support than of old.

In heavy artillery an officer is concerned at once with twenty different guns, with powder and charges specially adapted to each; the ammunition is prepared at the batteries; every species of fire is brought into play; all the mechanical powers are applied in mounting and manœuvring the guns; and, in short, an extent and variety of information required second to that in no other branch of service.

If we dwell upon this point, it is because the heavy artillery in this country has not been given its due importance in the past. This results in a great measure undoubtedly from the nature of the recent wars in which we have been engaged, and where our field artillery played such a glorious part. The Mexican war first brought renown upon this arm, and made the names of the battery commanders as widely known as those of brigade and division commanders.

During the Rebellion, the necessities of the situation led to the absorption of the whole *personnel* of the artillery by the mounted batteries. Not until we are involved in war with some foreign power possessing extensive naval resources, and the capabilities of our existing and contemplated seacoast defences are subjected to the *experimentum crucis*, will the full value and importance of heavy artillery be appreciated by the country at large. We ourselves, however, should appreciate rightly and thoroughly the nature and extent of the duties and responsibilities which would devolve upon us of necessity in such a contingency. No officer of the average ability can put off preparation for these duties until the emergency is at hand without risking some dishonor to himself and to his arm of the service.

Great as have been the changes in our own service, we cannot form an adequate idea of its development without reference to other countries. It would be alien to our purpose to enter into any lengthened comparison between our own ordnance and that of foreign powers, and only such salient points are touched upon as may serve to show that the inactivity which characterizes our condition is not paralleled elsewhere. It is true that this inactivity, so far as relates to the construction of ord-

nance, is enforced by the unwise legislation of Congress forbidding the manufacture of cannon, thus compelling the cessation of all experiments in the direction in which improvement is absolutely essential. This legislation seems to be grounded upon the assumption that our experiments, thus far, have not been made in the direction which promises success. It is of vital importance, however, that it be definitely determined whether our system of smooth-bored guns of large calibre is what we require or not. It may with truth be said that we have hitherto uniformly led the world in the fabrication and general adoption of the heaviest, and, therefore, most decisive ordnance. Our naval successes during the war of 1812-'15 were principally, if not wholly, due to this fact. The possibility of constructing reliable cast-iron guns of more than 8-inch calibre is due solely to the genius of General Rodman, as is the invention of large-grained or mammoth powder, now largely used in foreign services with heavy guns.

It may be that in adhering to cast-iron guns we are wrong; but this is yet to be demonstrated, and if at all, by the means by which we have heretofore maintained our superiority. Anything is better than inaction. A speck of war would lead to the hasty construction of heavy guns without any opportunity for experiments, by which alone good results are to be had. We have on paper 10-inch and 12-inch rifles, 20-inch guns, and 15-inch mortars, which in anticipation of war would be fabricated and sent to our seacoast works "with all their imperfections on their heads." Then disaster following disaster might demonstrate again, as often before, that such a policy is suicidal, and that it is well to prepare for war in time of peace.

WHAT HAS BEEN DONE ELSEWHERE.

By a system of experiments involving pounds where ours involve pence, England has apparently become satisfied with the steel-lined wrought-iron muzzle-loaders. The latest pattern of the maximum size is the new 35-ton rifle; calibre, 11.6 inches; charge, 180 lbs.; projectile, 600 lbs.; I. V., 1,300 feet.

The conversion of smooth-bored cast-iron guns into rifles of smaller calibre, by inserting a wrought-iron tube in the bore, has been pushed to a considerable extent; no less than 640 of these converted guns being in service, with no failure yet recorded. The guns selected for conversion have been the 8-inch and 16-inch shell guns, and the 68-pounder, giving to the new rifles calibres of 7 and 8 inches.

The breech-loading guns of Krupp are largely in use on the continent, particularly by Prussia, Russia, and Belgium. It is stated that Russia has contracted for 400 of these guns of 11-inch calibre; projectile, 495 lbs.; charge, 83 lbs. of prismatic (Rodman) powder; I. V., 1,360 feet.

Rifled Mortars form now either a part of the recognized armament of most of the leading foreign powers, or are the subject of continued experiment to that end.

Prussia has a rifled mortar weighing 7,480 lbs.; calibre, 8 inches; charge, 8 lbs.; projectile, 160 lbs.; I. V., 600 feet.

The Russians have bronze rifled mortars of 6 and 8 inches calibre. The former weighs 3,360 lbs.; charge, 8 lbs.; projectile, 90 lbs.; I. V., 900 feet. The latter weighs 8,624 lbs.; charge, 19 lbs.; projectile, 195 lbs.

In England experiments have been made on the conversion of the 13-inch S. C. mortar into a 9-inch rifled mortar by lining the bore with a wrought-iron tube, according to the Palliser system of conversion. A series of experiments has also been conducted to test the capabilities of the steel guns made for the Abyssinian expedition, when used as mortars. These guns are of 8-inch calibre; weight, 146 lbs.; length, 2.2 inches; are mounted on a wrought-iron carriage weighing 223 lbs., and carry a 12-pound shell with a bursting charge of 1 lb. Of 50 shots fired at angles of elevation varying from 30 deg. to 58 deg., all but four struck point first, giving an average penetration of almost 5 min. in stiff clay soil.

The only rifled mortar ever constructed in the United States, so far as we know, is due to the intelligent and persevering study of a gentleman in private life, and not at all to official experiment, influence, or encouragement.

Field Artillery.—In Great Britain numerous experiments have been made of late to determine the relative endurance of bronze and wrought-iron field guns, with the general result decidedly in favor of the former, which are proposed for adoption in the India service. It is true that the recent failures of certain bronze guns made at Woolwich have led to the impression that uniformity cannot be secured in their manufacture, but we are not prepared to admit this in the face of recent improvements in the making of bronze and casting of bronze guns.

A marked feature of the field gun of the Russian, Austrian, and Prussian services in comparison with our

own, is the greatly increasing weight of the projectile thrown, without a proportionate increase of weight in the gun. For example, the Russian 4-pounder of 3.42 inches calibre, weighs only 765 lbs., and throws a shell of about 16 lbs. weight, with an initial velocity of 1,004 feet, the charge being 1 lb. 8 oz.; the 9-pounder weighs 1,382 lbs., is of 4.2 inches calibre, and with a charge of 3 lbs. of powder and projectile of 31.3 lbs. gives 1,050 I. V. This gun, though but little heavier than our 12-pounder smooth-bore, is scarcely inferior to our 4½-inch rifled gun weighing 3,600 lbs.; the 12-pounder siege gun weighs 2,061 lbs., is of 4½ inches calibre, and with a charge of 3½ lbs. and projectile of 36 lbs. gives 1,006 I. V.; the 24-pounder weighs 4,914 lbs.; is of 6 inches calibre; charge, 7 lbs.; projectile, 71½ lbs.; I. V., 1,083 feet.

[The writer has not been able to obtain official or authentic figures concerning foreign ordnance, save in exceptional cases, nor does he know of any military library accessible to artillery officers, where such figures can be found. The library at the Artillery School, quite complete and valuable in many respects, is deficient in this particular. Any artillery officer who desires to do a service to his arm, can hardly put his time to better use than in compiling a full account of foreign ordnance from authentic sources. It is greatly to be regretted that we cannot have this done by personal inspection; but military commissions for visiting Europe unfortunately embrace, as a general rule, only the officers of the scientific corps.]

American artillery officers have long been pretty well united in the belief that we ought to have rifled guns of larger calibre than the 3-inch for field service, and it is understood that the Ordnance Department has contemplated the fabrication of a 3½-inch gun to weigh about 1,200 lbs.; but nothing beyond perhaps making the drawings has yet been done in this direction. If the 4-pounder Russian gun, referred to above, has only about forty-eight pounds of metal to each pound of projectile and is a serviceable gun, it would seem that we ought to get a 20-pounder weighing not more than a thousand pounds. It will be noticed that the proportion of weight of metal to weight of shot in the 9-pounder gun is less than 45 to 1.

HEAVY MORTARS AND CURVED FIRE.

Curved fire, a subject hardly yet mentioned in our service, seems to have become one of much prominence in Europe. The object of this fire from field guns is, of course, to reach troops or other objects sheltered from direct fire by intrenchments or accidents of ground. The tables of fire for the Russian artillery show the ranges and velocities due to the reduced charges necessary to give sufficient curve to the trajectory. The reduced charges for the 9-pounder are 1 lb. 1 oz. and 11 oz., and the corresponding velocities 597 and 386 feet. The cartridge bags are made up in sections, so that the reduced charge is readily determined without re-weighing or measuring.

Curved fire from heavy guns, especially mortars, is now recognized as second in importance to no other element of seacoast defence. Since the introduction of vessels clad with iron, so as to be more or less impregnable to horizontal fire, it is conceded that a system of obstructions combined with a powerful vertical fire is indispensable. This subject is presented in a very instructive and interesting manner by Abbot (to whom the artillery is so much indebted for his report of the siege of Petersburg), in "Notes on Harbor Defence." His views have not carried conviction so far among the officers of his own corps as they have among artillery officers, if rumor is to be believed.

We cannot enter into this subject at any length, without departing too far from our main purpose, and suggest only a single consideration. It should always be borne in mind that in case of a war involving the defence of our seacoast works, they would be garrisoned and defended by volunteers, almost exclusively; and it may perhaps be regarded as extremely doubtful whether any but the very best disciplined troops could be made to stand by their guns in our present works, when under the intense concentrated fire of a powerful fleet. In fact the question might be raised with any troops, judging from the record of Fort Royal, Fort Morgan, and Fort Fisher. Mortar batteries are not subject to so much exposure of the men, and this should secure their emplacement wherever they can possibly be made to enter into the defence.

These views are not new. The English, as far back as 1859, decided upon the construction of three batteries of the heaviest mortars for the defence of Spithead, one of which was to contain 38 mortars, in addition to the most powerful horizontal fire that could be obtained. How does this fact compare with what we see around us? We know of scarcely a work for which even the most moderate provision of mortars has been made. Officers ordered to the Artillery School generally see the 13-inch mortar for the first time, and regard it as a great curiosity. The projected 15-inch mortar, indispensable for crushing in the decks of strongly built vessels, has not even been cast.

In this important field for inquiry and experiment, absolute stagnation is even more marked than elsewhere. In the entire range of experimental gunnery, there is no

point concerning which there is such utter ignorance as mortar fire. We are without a single correct or useful table of ranges for the 13-inch mortar, nor is it practicable to construct one until a carefully conducted and thoroughly systematized course of experimental firing shall be had, to fix absolutely the grade of powder, and the weight and windage of the projectiles. Meanwhile, we can derive no benefit from mortar fire, except its moral effect, or such as may come from a happy chance shot. It is not claimed that other nations have arrived at entirely satisfactory results. It is not long since we read of an entire day's practice at Shoeburyness against a long row of casemates, in which not a single shell of the hundred fired struck the casemate. A somewhat extended and careful investigation into the causes of the proverbial inaccuracy of mortar fire, leads decidedly to the conclusion that all of the prominent elements of uncertainty may be eliminated, when we are prepared to move out of the rut in which we have been travelling, it may be said with little exaggeration, ever since Tartaglia invented the gunner's quadrant.

WHAT WE HAVE TO LEARN.

Powder.—It is not so widely appreciated as it ought to be, that the improvements inaugurated in the manufacture of powder promise more good to the artillery than those even for the manufacture of cannon. We say *inaugurated*, for the prismatic powder invented by General Rodman has received less attention here than abroad. We believe that in the future General Rodman's name will be spoken of more in connection with his improvements in powder, than for anything else he has done. All the experiments of the Ordnance Department on cannon powder, so far as we are aware, of late have been confined to getting a suitable powder for the 15-inch gun. The manufacturers, the Messrs. Du Pont, have obtained some remarkable results; but with this exception, the subject of the proper powder for our heavy guns seems to have been utterly ignored. It is not proposed to go into details here: we content ourselves by saying that the kinds of powder and charges prescribed for our heavy guns, from the 10-inch Rodman down to the 43-inch rifle, are entirely inappropriate; they rest on no system of experiments and comparisons, the whole thing being a piece of patchwork.

Chronoscopes are unknown to our artillery officers, except through the imperfect and unsatisfactory knowledge gained by the yearly detail at the Artillery School, where they may witness the occasional operation of the Schultz instrument by the Ordnance Department. This machine is perhaps too costly for general use, but neither Le Boulanger's nor Benton's is open to this objection. Now that Colonel Benton seems to have succeeded in still further simplifying his machine by holding the pendulum in suspension by threads, the cost must be materially reduced. Indeed, it is difficult to see why one might not be constructed at almost any post by an intelligent mechanic. At all our larger posts, as Forts Adams, McHenry, Hamilton, Jefferson, and at San Francisco, artillery officers should become practically familiar with some one of these machines.

Instruments for taking times of flight of projectiles with accuracy are unknown in our service, if we except the one stop watch at the Artillery School. When "guessing" is introduced into scientific artillery practice, either as to charges, elevations, times of flight, or in any other particular, the results are useless.

Range-finders.—Devices, under this name, for determining distances with accuracy and rapidity, have attracted much attention among artillerymen abroad. The importance of being able to tell at any instant the exact distance of an object at which our fire is to be directed, cannot be over-estimated. While ships under steam move much faster than of old, guns fire much slower, owing to the labor required in loading and training. The defence is secured by a small number of well directed shots, and not by rapidity of fire. Still with us the old system of "guessing" satisfies all our desires.

As long ago as in 1864, a plan was in use by which the exact distance of a ship, entering the harbor of Copenhagen, from each of the works constituting the defences, could be announced as often as once in thirty seconds. The works were connected by the electric telegraph, but a very good substitute for telegraphic communication exists in our system of signals. The method in use in Copenhagen was simply that of triangulating the position of the vessel by means of theodolites, the details being ingeniously arranged.

Numerous, and some apparently successful, attempts have been made to construct portable instruments for nearly instantaneous measurements. Among these may be mentioned the telemetrical telescope, invented by Captain Gautier, of the French Imperial Artillery; and the range-finder, invented by Captain Nolan, of the English service. The former is a telescope of only five inches in length, yet for distances of from three to six kilometres, with a base of thirty metres, has a maximum error of only one-fourth of one per cent., and with hardly an appreciable error for distances under one kilometre. A full description of this instrument is given by Prof. Barnard in his report of the Paris Exposition of 1867.

The range-finder consists of a pair of telescopes, one for either flank of the battery. The front of the battery being taken as a base line, the angles subtended at either flank by the object to be fired at and the opposite telescope are measured, and the distance read off from a calculating roller accompanying the machine. Though perhaps not possessing all the advantages claimed for it, extensive experiments show that its use greatly increases the accuracy of fire, and that the telescopes are little liable to get out of order by long and rapid movements of the battery. We have by no means exhausted the list of improvements agitated or accomplished, but have said enough perhaps to show that there is a wide field for experiment and investigation not yet even entered upon by us.

IMPERFECT USE OF OUR PRESENT MATERIALS.

But, dropping this subject, how thorough and complete a use do we make of the materials put in our hands. Take for illustration the semi-annual practice firing at

our permanent works. An order is given to the ordnance sergeant to make up a certain number of cartridges; the projectiles are taken at random from the nearest shot pile; the elevation given with a tangent scale, possibly made for a gun of some other calibre; the distance of the target guessed at; the time of flight not taken or incorrectly observed; the deviation entered as "almost a hundred yards to the right," "short," "over," etc.; and no description of the powder entered upon the record. We do not charge that all our experimental firing is thus loosely conducted; but there is no hazard in the assertion that the whole batch of firing records at the different posts, including the different artillery schools, are worthless for reference. These imperfect, and so far as we can see useless reports are finally sent to the Chief of Ordnance, by whom they are consigned to the oblivion they justly merit.

What are the records of experimental firing at the artillery schools of France, for it is from these we draw our illustrations chiefly in discussing the theory of fire?

First, we have a complete description of the powder; its density, size of grain, and general condition; and the initial velocity imparted by it to the projectile when fired from the gun in question.

The angle of departure, or angle at which the projectile leaves the muzzle, as distinguished from the angle of elevation, is accurately determined by experiment if not already known. [In the French guns, model of 1864-'66, this angle has a value of 13 min., due to the pressure of the breech on the carriage at the moment of discharge. With our own guns, without preponderance, Benton admits a variation of 4 or 5 minutes due to balloting. Easy as it is to determine this angle practically for each class of guns, it is doubtful if it has ever been attempted in our service.]

The charges are weighed with the nicest accuracy, and the several dimensions of the cartridge taken.

The projectiles are weighed, and brought to a uniform standard when practicable.

The exact calibre is recorded, and the eccentricity noted. [Given a powder of uniform quality, and the accuracy of fire, particularly of mortar fire, depends upon these three points chiefly, viz.: weight, windage, and eccentricity. The variations from the standard are sources of error that can be readily eliminated by greater care in the manufacture. Spherical projectiles are here referred to.]

The state of the barometer, thermometer, and hygrometer, and the force and direction of the wind are registered.

The elevation is given by the spirit level, a method not always exact, however.

The times of flight are observed by a stop-watch especially constructed for the purpose and arranged to time even the ricochets.

The ranges are measured by plane-tables. Three should be used for this purpose, one serving as a check on the other two. [How widely is this simple and indispensable instrument used in our service? at how many of our artillery stations is it supplied and used? The answer is not flattering to our intelligence.]

When firing at a target the deviation is taken from the centre of impact.

It is true that in the experimental firing conducted by the Ordnance Department, most of the points referred to are taken into account, but not in a way to materially assist the artilleryman. Their experiments are directed generally to special points alone. A long series will be found recorded to test the pressure and initial velocity due to a certain grade of powder; another to determine the extent of recoil; another to show the comparative accuracy of certain projectiles but seldom if ever will be found grouped together the facts essential for solving any of the problems in scientific gunnery.

It will be said by some that such minuteness and accuracy are not attainable in our service; that the necessary facilities do not exist, and cannot be procured; that were it practicable it is not desirable for officers not belonging to a scientific corps to go into such details. It would be remarkable indeed, if at any post where practice firing is carried on for the benefit of officers, the simple and inexpensive apparatus required could not be procured. A Benton velocimeter would cost much less than the powder and shot thrown away in "getting the range." One 15-inch shot would perhaps pay for a densimeter, another for an eccentricometer, and so on. Parsimony in this case is not economy. One shot, with every material circumstance attending the firing, accurately recorded, is of more value than a thousand with the meagre record too generally given. And if it should happen that some one or more of the machines required cannot be procured in any instance, this is no good reason for not making the record as complete as may be in other respects.

If there are any artillery officers who contend that this kind of work is out of our sphere, it seems to the writer that they are only adding new evidence of our present professional paralysis.

TACTICS NOT ARTILLERY.

But the science of gunnery is only an item in the education of the artillery officer. He should be practised in the estimation and measurement of distances, including the use at least of the simpler surveying instruments. He should be able to improvise temporary obstructions, including torpedoes, for roadways and channels. He should know the speed, armor, and draught of representative foreign vessels of war; the vulnerable points of iron-clads, etc. He should be able to manufacture powder, fuses, incendiary composition, etc. He should know the proper composition of batteries for seacoast defence. He should know also the proper composition of siege trains; how to embark and disembark materiel; how to construct magazines for his ammunition, and bomb-proofs for his men. He should have an intimate personal knowledge of all the approaches to a work by sea and by land, within such limits as may possibly come within the theatre of operations, and understand the relations of the ground with these limits to the defence of the work. He should be well practised in surveying and mapping out such grounds correctly. He should study the means requisite

to oppose a landing. It is only by a full and accurate knowledge of the country adjacent to a work that any good scheme of defence can be founded. This problem of defence under every possible condition that may arise should be the constant study of artillery officers, and a clear understanding had of the actual utility of existing works, since the introduction of guns of great range and power has so changed the conditions of the problem. It may often fall within the duty of the artillery officer to propose and execute lines of defence under these new conditions, or to make the necessary additions to or alterations in existing works, to prepare them for the strongest defence. He may have to determine the best location for obstructions and torpedoes, and should have, not only a general knowledge of their construction, but a practical knowledge of the application of electricity to the torpedo service. It is also important that he should comprehend the best mode of signalling that can be applied to the locality.

It is not asserted that the artilleryman will be required to originate, execute, and put in action all these important parts of a sound defence, but it cannot be questioned that he may find use for all the knowledge referred to here and much more. No officer who lacks it can fulfil all the demands that may be made upon him. In case of war many of the senior officers of engineers and artillery will doubtless be called away from their usual duties to higher commands, and their responsibilities would necessarily fall upon the lower grades even of artillery officers, who should then be found competent to perform all herein suggested, and more.

The specifications might be extended indefinitely, but we close them by an extract from a general order published by Major-General T. W. Sherman, while commanding the Third Artillery. It is the first public and authoritative declaration from one in his position, that to "know one's tactics" is not to know artillery. It is to be hoped that General Sherman may see good fruits from his order, though not able himself to put it into execution:

The requisites for every separate command within the regiment are: that every officer and man shall be thoroughly familiarized with the use and practice of every species of ordnance at their station; and in addition to this shall understand and be able to explain every principle connected not only therewith but with all ordnance in existence.

This covers a great deal of ground and involves laborious study and research. . . . The non-commissioned officers should be made to understand the results, as well as a general idea of the process by which they are arrived at, without however entering into any scientific computations beyond their reach.

The artillery and ordnance of an army, or of a nation, are getting too numerous in kind and varied in application to even think of fully teaching their more extended application and effects by the mere drill and practice of a few batteries.

In order that this instruction can come more under the control and supervision of the regimental commander than heretofore, it is ordered that while the practical instruction at each post during the quarter ending December 31, 1870, will go on as heretofore, and involve the ready handling and practice of every species of artillery at the post, the theoretical instruction will be confined to the following subjects, viz.: The manufacture of the powder of war—all its characteristics—all the principles of its ignition and combustion—the general laws which control its action and effects in combustion, particularly in guns—its action and effects upon guns as well as projectiles—the mode of casting guns—theory of strains upon guns, both rifled and smooth-bore—general principles that govern the weight of charges in smooth-bore and rifle guns—application of those principles to all classes of guns now in use.

The course for the next quarter will be announced in due time with more particularity, but it may be considered that as a corollary to the preceding, it will embrace the effects of the atmosphere upon the flight and action of projectiles under all circumstances—the calculation of this effect or of the resistance of the air upon projectiles of different form—and its practical application in the calculation of initial velocities, ranges, remaining velocities, etc.

We copy from manuscript, and may have mistaken the phraseology in some instances.

The order is a bold and manly effort to stand the artillery on its feet, a task only to be accomplished however by united effort. Our past condition has been lifeless, our present is far from flattering. What officer of the heavy artillery acquired special distinction in his own arm of the service during the war? Where is the report that can be pointed to with just pride? Even the officers distinguished in the light artillery who have material of great value collected, and ability to present it in a shape to make it of permanent value have as yet made no sign.

The siege train at Petersburg was commanded by an engineer officer, colonel of a volunteer regiment, and his report is almost the only one to which an artillery officer can refer to-day for such information as would be of use in fitting out and managing a siege train. The report next in value perhaps, that of the siege of Pulaski, was made by an ordnance officer. Of all that is new or useful, and there is much, in the published account of the siege operations in front of Charleston, the artillery can claim but a meagre share. There are reasons for this which will be referred to hereafter, but it is primarily due to the fact that we have persistently been educated to the belief that thinking and collecting information is not our province; that to us belongs only the drudgery of our profession—the hewing of wood and the drawing of water; while to the so-called scientific corps belong the collection and classification of results; the suggestions for improvements; in short, all the deductions that are made by subsequent thought, and study, and comparison of records.

Everything pertaining to our profession but the actual service of the piece is now taught at the Military Academy by an ordnance officer; and so easy is the graduation that it would not be a very great surprise to see the Artillery School pass under the control of the Ordnance Department—not that the officers of that corps have any inclination in that direction, but when the principle is firmly established that we draw our mental sustenance from another corps, the application follows as a matter of course. When we attempt some higher instruction than the drills and mechanical manoeuvres, we are "teaching ordnance."

A CHIEF OF ARTILLERY WANTED.

If it be admitted that our position is not what it should be, what do we need? If there is any approach to unanimity on any point in the artillery, it is to the effect that our greatest need is a Chief of Artillery. This subject has often been agitated, but generally coupled with propositions of reform too radical to meet approval

at once. It has sometimes been frowned upon by officers of high rank in our arm because they "wanted no king." At times when the occasion seemed propitious for advantageous legislation, the scheme has failed because the support of the artillery could not be concentrated upon any one plan. Charges of "axes to grind" have been freely bandied about, and little credit given for motives which would lead officers to regard the general good of the artillery rather than self-interest.

It seems to the writer that this subject is one that ought to be considered without any reference to corps organization, consolidation, or any of the plans proposed from time to time. We want a chief to direct and encourage investigation and experiment; to establish a general and uniform system of instruction; to urge in our behalf needful legislation and regulations; to give us coherence and strength. Our weakness lies in our dispersion and isolation, with everything to stagnate the mind and crush out ambition. To acquire knowledge for knowledge's sake is rarely done. Some outward spur is needed, some hope of reward, some dread of failure. What future has an artillery officer except such as chance may determine? The indifferent, the ignorant and inefficient come to their reward by ordinary promotion as soon as the ambitious, the laborious, and accomplished officers. No matter how aspiring or enthusiastic the young officer may be, no matter how much he may strive to excel, a few years of service generally shows him the uselessness of swimming against the tide, and he floats away with the current, as listless and spiritless as his predecessors. Once in a generation or two some great convulsion like our civil war may bring these men to the surface, but even then the chances are that they are pushed aside by some one of political influence. With an established head it is impossible that merit should not be more freely recognized.

CONSOLIDATION WITH THE ORDNANCE.

Kindred to this subject of a Chief of Artillery, and of equal importance to us, is that of our relationship to the Ordnance Department. Every year makes it clearer and clearer that the existing arrangement is an effectual bar to all substantial progress and reform in the artillery, not for the best interests of service, and fraught with danger to the Ordnance Corps itself. It was a matter of vastly less importance twenty or even ten years ago, before the wonderful development of artillery had occurred. The questions then agitated were such as properly belonged to a bureau of construction, and had reference more particularly to the manufacture of arms and of powder. The published records of the department show that these points occupied its entire attention. But a thousand questions with regard to *material* and the science of gunnery have since arisen, which the Ordnance Department has not and cannot adequately consider until it is brought into closer relations with the artillery. The proofs of this are ample. In other words, it results from the present organization of the two corps that a very important and extensive field is occupied by neither. The Ordnance Department claims the title to it and prevents entry on our part, but does not work it itself. The exigencies of the times have forced the Ordnance either to attempt to control matters where success cannot be had unless theory and experience go hand in hand, or to yield to us a greater share in the management.

It is the writer's experience that the intercourse of the Ordnance with the artillery has been characterized by liberality and a readiness to conform promptly to all suggestions of merit emanating from the artillery. But it is true that if we had a more direct interest in making these suggestions, a hundred would be made where one is now. The adaptability or non-adaptability of Ordnance material for the purposes for which it is intended, becomes apparent only in use; and nearly every change for the better that is made in the construction, must of necessity be due to recommendations of officers in whose hands the material has been placed. It is a very dangerous thing to trust to theory to the exclusion of experience. It is a simple and plausible theory that Rodman's plan of casting guns without preponderance, so essential in large calibres, should, for uniformity's sake, be followed in the field artillery; it is a fair deduction of theory that this enables us to dispense with elevating screws for the 3-inch and 4½-inch guns, and to give the elevation by the hand, a handspike, or ratchet-post; but experience will suggest some very powerful reasons against a radical change.

It is easy to make a gun-carriage which shall conform to the theory of trains, and resist all the shocks of firing and transportation; and yet the carriage may be absolutely unserviceable by reason of non-attention to details of construction, such as only experience can indicate.

The iron mortar-beds may have the necessary weight, strength and bearing, to resist recoil; and yet by forgetting that a change in their construction involves corresponding changes in the mortar-wagon, it may happen that but one mortar can now be carried, where three of the old pattern were carried.

These illustrations are given in a spirit very far from that of hostile criticism, but to make clearer the point that the entire separation of artillery and Ordnance is unnatural, and injurious to the service; because the Ordnance must lack clear conception of the needs and requirements of the artillery, so long as their conclusions are drawn so largely from theory, and their actual information procured in the loose, disjointed, and roundabout way in which it is now obtained.

But it is often said, Why should the Ordnance be merged with the cavalry or infantry, since it supplies the arms and equipments for those arms of service? If this argument does any execution, it is at the breech rather than at the muzzle, for our reasoning is not based on such a supposition, but on the fact that while the present organization is calculated to keep the artillery in leading strings forever, the Ordnance Corps does not and cannot do justice to what we may call the subject of experimental artillery. We argue in favor of a reorganization of the two corps, primarily because it is a vital matter to us; and for the additional reason that the interests of the service would be greatly benefited, over

and above the benefit which would accrue from an improved Artillery Corps. If the argument or statements we have quoted prove anything, it is that the Ordnance Corps should avail itself to the fullest extent of the experience of the officers of all branches of service for which it furnishes arms and equipments. It will not, however, be seriously contended that any such intimate relations exist between the infantry or cavalry and the Ordnance, as between the artillery and Ordnance, since the few arms and equipments used by the cavalry and infantry are to those required by the artillery as 1 to 1,000.

It has been suggested that the Chief of Ordnance should also be the Chief of Artillery, but this proposition is received with greater horror, apparently, than one for organizing the artillery under a separate head. In approaching this subject some Ordnance officers appear to be under a nightmare of apprehension that it covers a conspiracy to turn them out of their pleasant quarters *en masse*, and, after seizing the spoils, to consign them to the damp casemates and dreary surroundings of our permanent works. These fearful forebodings come only from a disordered imagination. The apprehensions of another class, that had we the power we would enter upon a course of turning and overturning, until "confusion worse confounded" would result, are equally visionary. Dissatisfaction at our own condition, and not envy of or hostility to our neighbors, is the controlling motive.

What reasonable objection can be urged against a plan of reorganization or union, which would enable a Chief of Ordnance and Artillery to avail himself of the experience or aptitude of such artillery officers as might be useful in the Bureau of Construction, and to transfer to the line or other duties from time to time those Ordnance officers who do not excel in the discharge of the special duties of their position? It cannot be claimed that no such cases exist; that the artillery officers are all of a lower grade of intelligence, and that all Ordnance officers are inept Rodmans and Bentons. Nor can the subject be discussed with advantage from any standpoint of this nature. The time is not far distant when it must be met by something besides smiles and ridicule. When it shall become apparent that, as an educated and thoroughly informed body, we are behind the artillery service of any other first-class power in the world; that our education is systematically confined to the veriest details of our profession; that the artillery of to-day is not materially different from that of fifteen years ago, or, in other words, that we have failed to keep abreast with the progress of the times; when this becomes more apparent, we say, candor and justice will ascribe the fault to our pernicious organization, which neither encourages nor permits any independence of thought or action. And if at the same time it shall appear that in very many matters neglected by us, as not in our sphere, the Ordnance Corps is no less deficient, it may be ascribed to their faulty organization; and it may then be concluded that the separation of the two corps is an unnatural one, damaging to the efficiency of both.

We suggest no plan of consolidation, submitting only as a starting point the principle that the highest place in the synagoge should be as open to an artillery officer as to an Ordnance officer, and that there should be an end to the exclusiveness which has so effectually shut us out from the higher walks of our profession.

As is well known, the House Military Committee, in its special report on Army organization in 1869, recommended the consolidation of the two corps. The following views were elicited by the committee:

MAJOR-GENERAL HUMPHREYS.

After giving a sketch of the organization of the Ordnance Corps, General Humphreys remarks:

The organization of that department was understood to have greatly improved the Ordnance of the military establishment in all its branches.

Q. If affiliated with the Artillery Corps and was part of it?

A. Yes.

Q. Do you think the improved condition you mention is owing to the organization of the corps?

A. Yes, I think so.

Q. Was it the organization of the corps or the education they received?

A. I take it, the organization of the corps contributed largely to the result. The investigations connected with its duties require a great deal of study. The improvement, of course, arose from both causes. I am unable to give each its due weight in the result. I know that the improvement has been very great. It is true that similar advances have been made during all this time in the armament of other nations, just as there have been great advances in all arts and manufactures, and industrial pursuits of every kind.

We place in italics so much of General Humphreys's testimony as seems to us to be a logical refutation of his opinion that the improvement was due principally to the organization, since the same improvement, or greater, took place in other countries where the Ordnance has not a separate organization. All that General Humphreys urges was urged with a greater force against the consolidation of the topographical engineers and engineers proper.

The cause of the improvement is much more easily explained.

MAJOR-GENERAL HANCOCK.

Q. In your opinion what would be the propriety of consolidating the Army and Naval Ordnance Corps?

A. That I have not thought of. I may say here, however, if you think proper, that the only plan I can suggest would be to unite the artillery and the present Ordnance Corps under an artillery head, and detail for Ordnance duty artillery officers from time to time.

Q. What would be your recommendation for the management of the Artillery and Ordnance Corps if they were combined?

A. I have not given the subject that kind of thought that would enable me to express any valuable opinion on it. I believe, however, that a wise combination might be made of the artillery officers and those necessary to select for Ordnance duty. Whether the business of fabrication should be continued in connection with the Ordnance Department, or whether it should be done entirely by contract, is another matter to be considered.

Q. So far as taking care of the arsenals, and keeping arms, and the protection of property are concerned, is there any reason why intelligent artillery officers might not be detailed for that duty?

A. I see none. If there is any special knowledge required in taking care of an arsenal, it is a matter of education, and officers of the Ordnance Department have to learn it just as the artillery officers would. The artillery officers when first detailed for this duty would know as much about it as those belonging to the Ordnance Department when first detailed.

Q. Have the Ordnance and artillery ever been together?

A. Not to my knowledge; but there has always been an attempt

to bring them together in my time. The artillery have felt that they ought to have more control over the Ordnance which they have to use, and there has been a disposition to consolidate the corps for many years. The artillery claim that they are a scientific corps, and that the Ordnance should belong to their department. That question was agitated many years ago; probably the war stopped the agitation, but it existed before the war, and has been renewed since.

MAJOR-GENERAL McDOWELL.

Q. What is your opinion as to the propriety of consolidating the artillery arm of the service with the Ordnance Department?

A. If you had asked the question as to whether a corps could not have been constituted that would do these two services better than the present two organizations, I should say, yes.

Q. Give your reasons for this.

A. We have now a body of officers—artillerists—who have no lot or part in the device of the artillery and munitions they use, and a body of officers—Ordnance Corps—who do not use, or whose duty it is not to use the guns and projectiles and munitions they make. This, it is true, applies, but in a far less degree, to the other arms of the service; but in the artillery good should come of there being a closer connection between the theory and practice of the art than exists. In both the English and French service the Ordnance and artillery—such as the latter is with us—form one corps.

Q. Were they ever so in our service?

A. In the Mexican war General Scott used the Ordnance officers in his siege artillery; they also served in the light battery. (General McDowell might have added, while the artillery officers whose places were thus taken were serving as infantry.) I find we have had an Ordnance Department, in which officers of artillery were on duty at arsenals. We had no light artillery at that time; nothing but heavy guns on the seaboard fortifications. We did not have the light artillery until 1838. There are many inconveniences in having the Ordnance and artillery distinct, but it has also its good side; there is also a good deal to be said in favor of it.

Q. Has this question ever been debated in the Army?

A. Yes, to a considerable extent. The artillerymen mostly desire it, but the Ordnance Corps oppose the consolidation. They command their own arsenals and are not only to their own chief in Washington; they have their appropriations and construct all their own buildings, and the consequence is, you see the Ordnance establishments are very much better than any other part of the service. They have a very strong esprit de corps, and would very much dislike to see themselves merged into any other branch. The difficulties I see in the way are more of a personal nature than anything else. You get considerable advantage in keeping a man on some special subject. But as the making of Ordnance is not the end but the means, and as the effective use of what is prepared requires now more than ever as much ability as the preparation, I think the artillery should be raised to as high a degree of excellence as the Ordnance.

[Perhaps the esprit de corps of the Ordnance is explained by the following figures given by General McDowell, taken into account with what he says about the "Ordnance establishments:"]

The proportion of field officers to all grades in the Ordnance is 17 to 64, or 1 in 3.75. In the artillery, of 52 officers, there are 5 field officers, or 1 in 10.4.

[The artillery has neither the benefit of fine "establishments" nor rapid promotion, and has preserved its esprit de corps rather by lack of than through excess of favor.]

MAJOR-GENERAL GEORGE H. THOMAS.

Q. Please give the Committee your judgment on the propriety of consolidating the Ordnance Corps with the artillery?

A. I should prefer it as it is, because the preparing of ammunition, and storing of ammunition, and furnishing ammunition are all special services; and it is not natural to suppose that an officer detailed temporarily to do such duty would take so great interest in it as one who had been appointed to the position on account of his scientific attainments. The latter would take special pains, not only to keep himself up to the mark, but would endeavor, as far as possible, to improve a person only engaged temporarily in a thing will not take so much interest in it as one who is engaged in it permanently. [General Thomas has here given the argument usually relied upon as conclusive against consolidation. It is fully answered by the fact that our organization is exceptional to that of all other great powers, and it cannot be maintained that we are benefited by the exception. And that Ordnance officers, as a body, are Ordnance officers by reason of possessing any greater "scientific attainments" than may be found, under parallel circumstances, in a like number of artillery officers, we do not admit. That service in the Ordnance Corps is calculated to develop certain intellectual faculties which may not be equally exercised in the artillery may be true; and it is this opportunity which we seek as a right.]

GENERAL RUFUS INGALLS.

Q. What would be your opinion as to the propriety of merging the Ordnance and Artillery Corps?

A. Never having served in either, and not being able to give any reasons, I probably ought not to give any answer. I should say, from the experience and knowledge that I have on the subject, that there would be a great deal of propriety in merging them.

MAJOR-GENERAL SCHOFIELD.

Q. Please state to the Committee your opinion as to the propriety of consolidating the Ordnance and artillery into one corps?

A. As an original proposition in the organization of the Army, I would not hesitate to say that the Ordnance and artillery should be one corps, because their duties are so intimately connected. To make an officer efficient as an artillerist, he ought to have the advantages which an Ordnance education will give him. There may be a practical difficulty in the consolidation of the two branches under the existing circumstances. The two having been separate, the standard of qualification for artillery officers has been much below that of the Ordnance service, so that in fact the great proportion of artillery officers would be quite inefficient as Ordnance officers; and if they were consolidated, therefore, it would not be found expedient to assign artillery officers to Ordnance duty, except to a limited number, from the entire corps.

Q. Are Ordnance officers, on the other hand, qualified to act as artillery officers?

A. As a rule the Ordnance officers would very soon qualify themselves to act as artillery officers. As a corps they are very superior officers.

Q. Are the duties of the two corps sufficiently similar to make it practicable to adjust these difficulties which you suggest, in case of consolidation?

A. I do not think there would be any lack of efficiency in consequence of consolidation.

[It is evident from General Schofield's last reply, that the practical difficulty he suggests does not carry great weight with it in his own eyes; on the contrary, his remarks furnish one of the strongest arguments for consolidation. It is not to be supposed that the head of the consolidated corps would assign incompetent officers to duty in the Ordnance Department. There might be but one officer fit for the assignment, and there might be a score. Be the number few or many, it would certainly begin to increase rapidly from the very instant of consolidation. Artillery officers would strive to qualify themselves for the new duties, and Ordnance officers would strive to qualify themselves better for their old duties. The standard of admission would be higher and uniform, and the artillery would stand for the first time on firm ground, with inducement and opportunity for progress.]

Pending a reorganization and union, our corps should be fairly represented on all boards appointed to take action on any subject pertaining to artillery. The Chief of Ordnance has recently been in the habit of giving the artillery representation in certain boards, but it is not enough that the rule should be permissive only; it should be obligatory. It may be said with truth that the cavalry and infantry should also be represented, when matters pertaining to those arms are under consideration,

but our concern just now is for ourselves. The Chief of Ordnance has recognized the principle involved, by his voluntary and liberal action in this respect, and all we ask is, that our representation may be authoritatively recognized as a right and not a privilege.

Not only on the boards convened for the consideration of matters specially relating to the artillery should we have a place, but also on the mixed experimental boards for testing the relative powers of attack and defence. Our interest in the question cannot be considered remote, since whatever may be the decision arrived at, we will have to put the theories to the actual tests. It is true that certain officers of artillery have been invited to witness the experiments, but here again it is a courtesy and not a right.

In dwelling upon our connection with the ordnance, let it not be thought that our relations to the engineers are too unimportant for comment. There is here much food for reflection; but we will do no more at this time than to enter our protest against the depreciated estimation in which our arm is practically held by the Corps of Engineers, and to assert our absolute and intimate connection with the high science of which that corps assumes to be the sole exponent. This much we do because we strive to have the artillery appreciate and assert its true dignity.

Now that the whole system of fortifications is, as it were, at sea, and new questions presenting themselves for settlement faster than the old ones are disposed of, it is possible that even an artillery officer might be a useful member of a fortification board.

So far as may be gathered from hearsay, there is at least as much unanimity among artillery officers concerning some mooted points as obtains among the engineers. Such a detail would not be without precedent. The "Royal Commission" appointed in England in 1859, "to inquire into the present state, condition, and sufficiency of the fortifications existing for the defence of our United Kingdom," and to examine "into all works at present in progress for the improvement thereof, . . . and the most effectual means of rendering the same complete," consisted of engineer, artillery, and navy officers, and a civilian. When, in 1862, after the first action in which the *Monitor* took part, this board was reconvened, to it were added another representative of the artillery, one of the engineers, and one of the Navy. The reports of this board are public documents, and display a great advance over the illiberal and exclusive exclusiveness practised in our own service. Could no exception be taken to the manner in which some of our latest works have been constructed, our criticism would have less force. But as the object of fortifications is to protect the guns which the artilleryman must serve, and on whom rests the responsibility of success or failure, it cannot be considered presumption in him to sound thoroughly every point on which success may depend. In many cases the intelligent artilleryman is compelled to enter a silent but sincere protest against errors that might have been avoided had a proper appreciation of the capabilities of the personnel and matériel of artillery entered into the original consideration of the question. It is quite certain that an artillery officer, charged with defence of any one of many of our forts, apprehending an attack, would be compelled to resort to some extensive engineering before he would feel at all satisfied with the situation; and in some instances he would prefer to place his guns in other localities rather than risk his reputation on existing chances.

SPECIAL INSPECTOR OF ARTILLERY—INSTRUCTION.

Another thing which would add very much to the efficiency of the artillery, even on its present basis, is the appointment or detail of a special inspector of artillery. Very likely it might be advantageous to extend the application of the principle to the appointment of special inspectors for all arms. Is it not the fact, however, that the inspections of nearly all artillery posts are conducted on an infantry basis? Indeed, it may be questioned, without discredit to the Inspector-General's Department, whether a comprehensive and thorough inspection of an artillery command can be made by an officer who has not made the subject of artillery a specialty. How is an inspector to report fully and accurately upon the efficiency of the officers as *artillerists*, or on the manner in which the system of instruction ordered by the War Department is carried out, unless he has himself served as an artilleryman and is thoroughly informed on the subject? The evil is partially remedied by requiring the colonels of regiments to visit their commands, but the inspections made by the officers of the Inspector-General's Department are for other and different purposes, and can in no way be lessened in importance by the inspections of commanding officers.

Another matter wherein great reform is attainable is the system of instruction prescribed for the artillery. Every officer can bear testimony to the fact that the instruction given at posts is, as a rule, trifling and unimportant. It is worse than trifling too often, because it leads some young officers to conceive that they know all that is requisite, because they have studied the prescribed text books, scrupulously omitting everything approaching "theory." Our established text books are Gibbon's Manual and Roberts's Handbook, neither of which has been revised in several years. Is it not true that by far the larger number of artillery officers are ignorant of even the character of standard artillery literature of foreign countries, and know those which are standard the world over only by name? There are excellent reasons for this, such as the isolation of posts and the cost of professional works. But a remedy exists and regimental commanders can apply it.

The order heretofore quoted, issued by General Sherman, would, if enforced, create an active inquiry for other works than Gibbon and Roberts. The regimental library could at least procure the standard modern works. [Why, by the way, should post libraries be broken up every time a company changes its station? Under existing regulations a company may carry almost the same set of books for years. If post libraries were left intact, the soldier would be the gainer rather than loser in the end, since he would not always have the same familiar

books staring him in the face.] And it could not be considered a very great hardship were an officer required to buy from his own pocket the requisite text books.

The trouble in this matter lies pretty deep. It is, to speak plainly, that professional ignorance is no disgrace, and too many officers in our own Army appear to think there is no necessity for anything beyond drills.

The general school at Fort Monroe is probably the best one we have ever had, and its possible benefit can hardly be overestimated. It ought not to exhaust itself, however, by striving to make up for the deficiencies and shortcomings of all the post schools, nor adapt its standard to the lower grade of intelligence. The whole subject of instruction should be brought under one comprehensive plan; and here, as in almost every view we take of our position, is seen the need of a head or chief, to systematize and direct.

It would not be a difficult matter, as it seems to us, to make the post schools so many preparatory schools, in which officers may be prepared to enter upon a more extensive course at the general school. The standard of admittance into the artillery is so low that there is scarcely any point at which we may begin with some officers, and say, Here we have a foundation upon which we can commence to build. It is useless to enter upon descriptions of the pendulum-hauser lines and planes of sight and fire, to an officer whose only idea of a plane may be that it is one of a carpenter's kit of tools. It is useless to try to teach him the application of the formula for determining the number of balls in a pile, when the very terms in which the formula is worded are a mystery to him. Yet if we are to have a certain amount of knowledge regarded as essential to the position of an artillery officer, and this knowledge is to be communicated to him after his appointment, primary instruction is as necessary as in any child's school. It is absolutely impossible to get any correct and lasting notions concerning gunnery, without some preliminary knowledge of the elementary mathematics. Short as is the course at the Artillery School, it is found that more real and substantial progress is made at the end of the year, by devoting the first three months to elementary geometry and algebra, than by entering at once upon the course of ordnance and gunnery. The fact that these branches are taught has sometimes been made the ground of ridicule and complaint, but it cannot be avoided. One must learn to walk before one can be taught to run. Either the instruction in the artillery must sink to the dead level of tactics and mechanical manoeuvres, or some elementary instruction be given to those officers entering the service without preparation. The natural and proper remedy would be in fixing and maintaining a higher standard for appointees in the artillery, but this will never be done with our present organization. A spasmodic effort will perhaps be made in this direction from time to time, but as soon as a pressure comes the flood-gates will be opened, and all barriers to admission swept away. Until the fact is broadly recognized that the drills and the command of men are but the A, B, Cs of our profession, so long will the necessity exist of a constant struggle against ignorance and inefficiency.

Granting then that a certain amount of elementary instruction must be given to a considerable proportion of the junior officers of artillery, the question recurs, Should this fall in any degree upon the general school? This question may be asked, not only of the theoretical but of the practical instruction. Instead of occupying the allotted time at the Artillery School almost entirely with target practice, ought not this to be left more generally to the post schools, and attention directed particularly at the general school to investigations of various problems in gunnery, the use of the chronoscope and pendulum; the effects of windage and eccentricity; the determination of specific gravities; the use of plane-tables and other surveying instruments; the estimation and measurement of distances; and various problems in practical engineering directly connected with artillery?

It seems hardly worth while to discuss at length the relative merits and advantages of post or regimental schools and a general school. Yet it is sometimes asserted that the former can accomplish all that is needed for the artillery, and the latter exists rather by sufferance, being regarded constantly as rather an experiment than an established fact. Observation and experience has, or ought to have, already settled this question, and settled it in accordance with the deduction of reasoning.

It is not easy to get the requisite number of competent and suitable instructors for one school, but the difficulty is magnified many times in getting a suitable set for each regiment.

It is possible to collect a creditable artillery library and museum for one school, but almost impossible to create five.

Neither is it practicable to find five suitable posts for the necessary artillery practice, and not only would there be a great loss of efficiency on this account, but the expense would be greatly increased.

A general school furnishes the appropriate place at which to try all new inventions, experimental carriages, etc. Should the general school be superseded by regimental schools, this source of instruction and improvement would be lost to at least four, and probably to all of the regimental schools.

A general school serves to establish and maintain a certain uniformity of instruction, and acts powerfully in developing an *esprit de corps*, by bringing about an acquaintanceship and intercourse among officers of different regiments, who might otherwise rarely or never meet.

Yet much as there is in our situation to encourage idleness and induce torpor, it would seem that affairs are worse than they need be. Lack of occupation, mental rather than physical, is the bane of our service. The condition of large numbers of officers is pretty thoroughly described by the word *aimless*. Brilliantly as they may perform their usual duties, they are lamentably below the mark they should set for themselves in their professional pursuits.

We appeal to the observation of all officers of experience, whether officers, as a rule, do not gravitate more or less rapidly, but always directly, to a condition of lethargy, from the moment they enter the service? Is it not too often the rule, that the graduate of West Point closes his books finally and forever, when he leaves the Academy, vainly imagining that for him there is nothing more worth learning in his profession? Instead of realizing that he, in truth, has only entered upon the threshold of professional knowledge, and that his most valuable accomplishment is in knowing how to study, he swells the crowd of idlers and drones, and fritters away his time in the most frivolous pursuits. There is with us no spur, as in the scientific corps, to disturb our self-complacency. But a spur is just as essential to prevent us from becoming, not only lazy and indifferent ourselves, but an evil example to those who follow us, as stimulants to an indolent ulcer. We feel that it would be impossible for so many good men to become listless and indifferent, if the higher walks of our profession were open to us, not as pleasure grounds only, but in which we must toil to discharge our daily duties even. It is because a thorough education in the scientific branches of artillery is felt to be a sentiment rather than a necessity, by many, that we find it so hard to compel officers to study their profession. But unless commanding officers are prepared, like General Sherman, whose order we have quoted, to set their standard high and bring their officers to it, we will make no substantial progress. In their hands is at least a partial remedy for the evils we have described. They cannot render less important a change of organization, and a responsible . . . the entire artillery arm, but they can do a great deal towards elevating the professional tone of the arm, and in so doing hasten the change.

They can establish uniform systems of instruction at posts, and compel the instructors to be serious and thorough. It has yet to be comprehended and acted upon, that this business of teaching and learning is a serious matter, not to be turned off lightly by a few questions from Roberts, Gibbon, or Benton, the answers to which even good non-commissioned officers have at tongue's end.

FRENCH AND PRUSSIAN TROOPS COMPARED.

A FRENCH staff officer, who was a prisoner at Coblenz, has spent his time usefully while imprisoned in writing a work called "Causes of our Disasters: Project of Reorganization of the Army," in which he compares the French and Prussian troops in some important points. "The principles of strategy," he says, "so difficult in practice, reduce themselves in theory to two simple principles, viz.: the movement of troops and their concentration at a given point. Armies must be divided in order to facilitate rapid marching and to obtain food with ease, but upon the day of battle they must be united in the most perfect possible concentration. In the movement of their troops (he goes on to say) the French labored under unfavorable conditions, in consequence of the heavy burdens carried by their infantry and their cavalry horses. In consequence of the weighty convoys of food and baggage which followed them, they were less movable than the German troops, against whom the reproach of slowness had always been cast. The introduction of rapidly firing arms has made the light equipment of infantry an absolute necessity. The infantryman in the field must not only bear the fatigue of marching, but also be able to handle his gun energetically, both for firing and charging. In the late war the French infantry were so overburdened that when rapid action was required, they laid down their baggage."

"In the campaign of 1870 the countless inconveniences of such a procedure were felt to a fearful degree." It is assumed that a man can, on level ground with a moderate step, travel from six to seven leagues daily, bearing a weight of 30 kilogrammes, if he has proper food and sufficient rest. In bad weather and insufficient food—condition not often lacking in war—this weight must be considerably lessened. The soldier cannot carry more than a third of his own weight, that is to say, from 20 to 22 kilogrammes. His clothing and shoes, cloak and head gear, weigh about 6 kilogrammes; his gun, with bayonet and its scabbard, weigh 5 kilogrammes which leaves 10 kilogrammes to be represented by food, camp utensils, and ammunition.

"If the quantity of ammunition and utensils is increased, the other appurtenances must of course be lessened. The Prussians for this reason carry no tent, but generally encamp in inhabited places, which their discipline permits without inconvenience if compelled to spend the night in the open air, they build shelters of branches and straw. Their knapsack is lighter than that of the French, and they carry lighter cooking utensils. They carry a linen bread pouch at the right side for food. Whenever practicable the knapsacks are put upon wagons. Under these circumstances whole army corps have travelled forty kilometres in a day."

"The French infantryman, with an uncomfortable knapsack, with a tent and tent-pole, with a quantity of camp utensils, with ammunition and provisions for several days, carries so heavy a burden that he can scarcely make twenty kilometres a day for any length of time, and that only at the cost of great exertion. The same observations are true of the cavalry, to whom a superfluous burden is even more of a misfortune."

"Why should not the French arm profit by the Prussian example, abolish tents, and allow each man to carry a small cooking utensil? In this way they would gain much in facility of movement without suffering too great inconveniences in bivouacking."

"The lack of organization in the administrative branches of the French army mad itself felt more in the last than in any previous campaign. There was confusion in the organization of the *Dienst-zweig* (service branch), inability to supply necessities, and overloading to such an extent that the army was unwieldy in movement. Besides this, the campaign in Africa had accustomed the French officers to comforts and good living which were not compatible with the requirements of modern warfare."